Goal 2: Clean and Safe Water

All Americans will have drinking water that is clean and safe to drink. Effective protection of America's rivers, lakes, wetlands, aquifers, and coastal and ocean waters will sustain fish, plants, and wildlife, as well as recreational, subsistence, and economic activities. Watersheds and their aquatic ecosystems will be restored and protected to improve human health, enhance water quality, reduce flooding, and provide habitat for wildlife.

Background and Context

Over the almost thirty years since enactment of the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), government, citizens, and the private sector have worked together to make dramatic improvements in the quality of surface waters and drinking water supplies. Cleaner, safer water has lead to a rebirth of recreational, ecological, and economic values in communities across the Nation. Despite tangible improvements in the quality of the Nation's waters, water pollution and drinking water problems remain. States and tribes are in the middle of the complex process of adopting and implementing statewide watershed approaches that in turn require strong standards, monitoring, Total Maximum Daily Loads (TMDLs), and implementation (e.g. National Pollutant Discharge Elimination System (NPDES) permit) programs. EPA and states are facing backlogs, court challenges, and petitions to withdraw state program authorization. In recognition of these challenges, the FY 2004 President's Budget provides additional resources to help address these issues and continue the water quality improvements of the past 30 years.

Means and Strategy

To achieve the Nation's clean and safe water goals, EPA will operate under an overarching watershed approach in carrying out its statutory authorities under both the SDWA Amendments of 1996 and the CWA. In FY 2004, the Agency will place particular emphasis on the core water programs – monitoring and assessment, standard setting, watershed planning, and implementation (i.e., NPDES and drinking water). Requested resources will help address serious challenges now facing these core programs. Moreover, the overall effect of individual core program improvements will be a stronger, better coordinated water management framework to help ensure timely local and national decision making, improved program implementation, and better information sharing. From setting goals to protect health and the environment in water quality standards and criteria to measuring success and identifying problems through water quality monitoring and assessment, and from watershed planning and load allocations to implementing pollution control measures, each program element relies on the others to ensure the achievement of the Clean and Safe Water goal.

The core programs are fundamental underpinnings of the watershed approach. Without a strong core program, states, tribes, local and other Federal partners would not be able to join in the protection of our waters at the watershed level. At the watershed level, local managers can better understand the cumulative impact of their activities, determine the most critical problems, better allocate limited financial and human resources, engage stakeholders, win public support, and make real improvements in the environment. EPA continues to encourage watershed approaches not only for core water programs but also as a way to integrate efforts of sister agencies, states, tribes, local governments, industry and nonprofit organizations. In addition, EPA is encouraging a number of important program innovations that focus on managing water resources at the watershed level, including trading, watershed permitting, and watershed based TMDLs. On January 13, 2003, EPA released a new Water Quality Trading Policy to cut industrial, municipal and agricultural discharges into the nation's waterways. The trading policy seeks to support and encourage states and tribes in developing and putting into place water quality trading programs that implement the requirements of the Clean Water and Federal regulations in more flexible ways and reduce the cost of improving and maintaining the quality of the nation's waters. The policy will help increase the pace and success of cleaning up impaired rivers, streams and lakes throughout the country.

As part of core programs, EPA will continue to implement the SDWA, as amended in 1996. The central provisions of the Amendments include: 1) improving the way that EPA sets drinking water safety standards and develops regulations based on good science, prioritization of effort, sound risk assessment, and effective risk management; 2) providing flexibility to the states in monitoring for certain contaminants and in setting time frames for compliance with regulations, and providing funding for improvements to drinking water infrastructure through the Drinking Water State Revolving Fund (DWSRF); 3) establishing new prevention approaches, including provisions for operator certification, capacity development, and source water protection; and 4) providing better information to consumers, including consumer confidence reports.

EPA will continue efforts to provide states and tribes with tools and information to assist them in protecting their residents from health risks associated with contaminated recreational waters and fish caught through noncommercial means. EPA activities include development of water quality criteria, enhanced fish tissue monitoring, development of fish and shellfish consumption advisories, and risk assessment activities. For beaches, EPA's strategy is to strengthen beach standards and testing, improve the scientific basis for beach assessment, and develop methods to inform the public about beach conditions. Beach water quality monitoring and public notification will be improved by providing grants to state and local governments under CWA Section 406.

Key to the watershed approach is continued development of scientifically based water quality standards and criteria under the CWA and better consolidated identification of waters not meeting these goals under CWA Sections 303(d) and 305(b). Where water quality standards are not being met, EPA will work with states and tribes to improve implementation of a TMDL program that establishes the analytical basis for watershed-based decisions on needed pollutant reductions. To support states and tribes in their standards adoption and TMDL programs, EPA will continue to provide scientifically sound criteria and guidance for toxic chemicals, nutrients, biological integrity, microbial, and physical stressors. In particular, the focus will be on updating the aquatic life guidelines to incorporate new and emerging science, integrating aquatic life, biological, and nutrient criteria to better address state uses, helping build state and Tribal technical capacity, and addressing sedimentation.

EPA will work with Federal, state, Tribal, local and private sector partners to protect wetlands. In coordination with the Corps of Engineers, EPA will improve the CWA Section 404 program to achieve no net loss of wetlands by avoiding, minimizing and compensating for losses. With an emphasis on community-based restoration, EPA will contribute to the goal of an annual net increase of wetlands of 100,000 acres by FY 2005. EPA will increase assistance to states and tribes to protect all waters, including those that are not regulated by the CWA, and to improve monitoring of wetlands. EPA will be part of coordinated Federal agency efforts to support conservation of fauna, including the North American Bird Conservation Initiative and Partners for Amphibians and Reptile Conservation.

EPA will continue to develop and revise national effluent guideline limitations and standards, capitalize and manage the Clean Water State Revolving Fund (CWSRF) program and other funding mechanisms, and target the NPDES permit program to achieve progress toward attainment of water quality standards and support implementation of TMDLs in impaired water bodies.

EPA is assisting states and tribes to characterize risks, rank priorities, and implement an effective mix of voluntary and regulatory approaches through improved state nonpoint source (NPS) management programs. Working with EPA, states and tribes are strengthening their NPS programs to ensure that needed NPS controls are implemented to achieve and maintain beneficial uses of water. In particular, EPA and the states are working together to better use the CWA Section 319 framework and funds to develop and implement TMDLs to restore waters impaired by NPS pollution. States will continue to implement coastal NPS programs approved by EPA and the National Oceanic and Atmospheric Administration under the Coastal Zone Act Reauthorization Amendments (CZARA).

The new Farm Bill, with its significantly increased funds to address agricultural sources of NPS pollution, affords EPA and the states an enhanced opportunity to significantly accelerate national efforts to control NPS pollution. EPA and state water quality agencies will work closely and cooperatively with the United States Department of Agriculture (USDA), conservation districts, and others in the agricultural community, to combine our strengths. Using CWA Section 319 dollars, states will both address their priority watershed restoration needs and focus more of their efforts on providing the monitoring and watershed-planning support needed by the agricultural community to target their work most effectively on the highest-priority water quality needs. States will also increasingly focus their existing efforts on filling gaps remaining in USDA programs, especially demonstrating the effectiveness of promising emerging technologies.

States will use their enhanced watershed planning efforts to ensure that their watershed protection and remediation efforts holistically address all significant pollution sources in the watershed in a comprehensive manner. To do so, states will also increase their focus upon NPS categories and activities that are not funded under the Farm Bill (e.g., urban runoff, forestry, and abandoned mines), while continuing to work with the agriculture community to solve problems on a watershed basis. Furthermore, states will continue to use a variety of program tools to foster an ethic of pollution prevention in their NPS watershed programs, such as low impact development techniques, source prevention, and public education, to assure that water quality improvement and protection become a permanent outcome of the program.

The Administration's evaluation of Nonpoint Source Grant, Drinking Water State Revolving Fund and Tribal GAP Grant (See Goal 4 Overview) programs in the PART process were completed in FY 2003.

The Administration’s PART assessment conducted for the Drinking Water SRF program found that the program has clear purpose, effective design and strong management practices. However, EPA has been unable to demonstrate the degree to which the program’s drinking water infrastructure investments protect public health, a primary purpose of the program. A challenge facing the Drinking Water SRF program is to develop measurable long-term and annual performance goals that link the program to its public health mission. The PART results support the Administration’s decision to extend Federal capitalization of the Drinking Water SRF program and to strengthen its focus on accountability. In response to the PART findings, EPA will develop new outcome-based performance measures that better demonstrate the impact of the program.

The Administration’s PART assessment conducted for the Nonpoint Source Grant program found that the purpose is clear but the program has not collected sufficient performance information to determine whether it has had a significant effect on pollution. The programs greatest weaknesses are strategic planning and a lack of measurable program results. Therefore, the program lacks

adequate long term annual and efficiency measures. However, new performance measures are being developed that focus on outcomes and efficiency. Significant improvements have been made to program management over the past years, which will improve the Agency's ability to develop new performance measures. In addition, as a result of the Farm Bill, the Agency is working with USDA to coordinate NPS efforts in agricultural in a complementary manner.

Research

EPA's water research program supports the Agency's Clean and Safe Water Goal by providing the scientific basis necessary to protect human health and the environment. Implementation of the research provisions in the 1996 Safe Drinking Water Act (SDWA) amendments and the Clean Water Act will provide improved tools (e.g., methods, models, risk assessments, management strategies, and new data) to better evaluate the risks posed by chemical and microbial contaminants that persist in the environment and threaten wildlife and, potentially, human health.

The focus of the drinking water research program will be on filling key data gaps and developing analytical detection methods for measuring the occurrence of chemical and microbial contaminants on the Contaminant Candidate List (CCL) and developing and evaluating cost-effective treatment technologies for removing pathogens from water supplies while minimizing disinfection by-product (DBP) formation. Water quality research will improve risk assessment methods to develop aquatic life, sediment, habitat, and wildlife criteria, as well as risk management strategies, and will help EPA and other Federal, state, and local agencies develop better baseline assessments of water quality. The Agency will also develop diagnostic tools to evaluate human and ecological exposures to toxic constituents of wet weather flows such as combined-sewer overflows, sanitary-sewer overflows, and storm water.

Several mechanisms are in place to ensure a high-quality research program at EPA. The Research Strategies Advisory Committee (RSAC) of EPA's Science Advisory Board (SAB), an independently chartered Federal Advisory Committee Act (FACA) committee, meets annually to conduct an in-depth review and analysis of EPA's Science and Technology account. The RSAC provides its findings to the House Science Committee and sends a written report on the findings to EPA's Administrator after every annual review. Moreover, EPA's Board of Scientific Counselors (BOSC) provides counsel to the Assistant Administrator for the Office of Research and Development (ORD) on the operation of ORD's research program. Also, under the Science to Achieve Results (STAR) program all research projects are selected for funding through a rigorous competitive external peer review process designed to ensure that only the highest quality efforts receive funding support. EPA's scientific and technical work products must also undergo either internal or external peer review, with major or significant products requiring external peer review. The Agency's Peer Review Handbook (2nd Edition) codifies procedures and guidance for conducting peer review.

Highlights

Core Water Programs

Water Quality Monitoring

Current water quality monitoring efforts yield insufficient data for states and others to make watershed-based decisions, to develop necessary standards and TMDLs, and to accurately and consistently portray conditions and trends. A key component in FY 2004 is the support of enhanced monitoring and assessment, by working with the states with a particular emphasis on the probabilistic approach and providing additional support to encourage the establishment of state-level monitoring councils and local watershed monitoring consortiums.

Water Quality Standards

Water quality standards establish the environmental baseline used to measure success in implementing Clean Water programs. In FY 2004, EPA will increase funding to work with state and Tribal partners to ensure that water quality standards are effective and appropriate for use in developing TMDLs. The National Research Council's 2001 assessment of the TMDL program found that the designated uses and criteria in existing standards often need more detail and refinement before they can be used as a firm basis for requiring load reductions through TMDLs. To address this concern, EPA in FY 2004 will provide technical guidance and training that will help states and tribes conduct their own use attainability analyses, and to help refine and interpret standards to ensure they are adequate for use in developing load reduction targets. In addition, EPA conducted a customer-focused review of the National Standards program and developed a draft long-term strategy that calls for improvements and streamlining in EPA's program. EPA will implement the high priorities in the strategy. EPA will also accelerate the technical reviews necessary for EPA to approve new or revised state/Tribal standards on a timely basis for use in TMDLs.

TMDLs

The Agency will continue to work with states and tribes to carry out their TMDL programs focused more, in FY 2004, on a watershed basis to identify those waters not meeting clean water goals. The Agency will also continue to help restore impaired watersheds, and to meet the many court-supervised deadlines for completing TMDLs. While increasing the pace of TMDL development remains important, EPA must work with states to help assure implementation of already-approved TMDLs, including targeting CWA Section 319 NPS funding and marshaling Farm Bill conservation programs. EPA will assist states in revising their continuing planning processes under CWA

Section 303(e) to place more emphasis on assuring needed watershed implementation.

NPDES

In recent years the authorized state NPDES programs have been the object of an increasing number of withdrawal petitions, citizen lawsuits, and independent reviews indicating potential noncompliance with Federal CWA requirements. A substantial number of states are experiencing difficulty with the timely issuance of NPDES permits. Recently completed permit quality reviews (PQRs) indicate that permits lack comprehensiveness and the requirements necessary to achieve water quality standards. In FY 2004, EPA, in partnership with the states, will ensure that facilities required to have permits are covered by current permits that are effective and include all conditions needed to ensure water quality protection.

Drinking Water Implementation

The proposed increase for the drinking water program will strengthen EPA's ability to meet states' and systems' increasingly complex implementation assistance needs. This assistance is critical for the national program to meet its long-term objective of providing drinking water that meets all priority regulations, within five years of the effective date of each standard, to at least 95 percent of the population served by community water systems. The increased resources in this request are targeted toward developing more effective state programs and increasing the technical and managerial capacity of drinking water systems to comply with drinking water regulations, especially the arsenic and microbial, disinfectant and disinfection byproducts rules. In addition, EPA will focus increased resources on the Area-Wide Optimization Program (AWOP), which is designed to reduce consumers' exposure to microbial contaminants by improving the performance of small systems' filtering technology.

Oceans and Coastal Protection

To strengthen protection of the nation's ocean resources, EPA proposes to address significant gaps in ocean and coastal protection in specific high priority issues. Recent legislation regarding cruise ships in Alaskan waters and Government Accounting Office and other reports has demonstrated the need to enhance cruise ship regulation and address continuing violations of existing standards. In response, EPA will enhance its regulation of discharges of pollution from vessels, including sewage discharges, cruise ship discharges, and operational discharges from vessels of the Armed Forces - Uniform National Discharge Standards – taking into consideration the concerns of the Armed Forces. In addition, EPA will place a strong emphasis on developing ballast water standards for aquatic nuisance species. EPA will also bolster its Marine Protection, Research, and Sanctuaries Act (MPRSA) responsibilities regarding site evaluation, designation and monitoring, and permit review and concurrence. In particular, EPA will work to expeditiously refine the site designation and management of the Historic Area Remediation Site (HARS) off the New Jersey coast.

Other Priorities

Homeland Security

Protecting critical water infrastructure (drinking water and wastewater utilities) from terrorist and other intentional acts will continue to be a high priority in FY 2004. EPA is the primary Federal agency responsible for protecting public health and ensuring the safety of critical water infrastructure from terrorist or other intentional acts. Currently, there are approximately 54,000 community drinking water systems and almost 16,000 wastewater utilities nationwide. Both types of water utilities serve approximately 264 million people. EPA's principal goal related to critical water infrastructure is to work with the states, tribes, drinking water and wastewater utilities, and other partners to assess the security of these water utilities as soon as possible and develop appropriate emergency response plans.

Water Infrastructure

In Puerto Rico, inadequate drinking water infrastructure has created a significant daily health risk to consumers. Less than 20 percent of the population receives drinking water that meets all health-based standards. Puerto Rico's compliance problem is a major challenge in the national effort to ensure that 95 percent of the population served by community water systems receives drinking water that meets all health-based standards. As a first step toward improved public health protection in Puerto Rico, the Agency requests additional grant funds to design the necessary infrastructure improvements. When all upgrades are complete, EPA estimates that about 1.4 million people will benefit from safer, cleaner drinking water. In addition, the Agency estimates that 200 to 300 excess cases of cancer will be avoided, and risks of gastroenteritis and other waterborne diseases will be greatly reduced.

Wetlands

In 2001 the Supreme Court determined that some isolated waters and wetlands are not regulated under the CWA. Many waters with important aquatic values are no longer covered by CWA Section 404 protections. EPA is proposing an increase in grants to states and tribes to help them protect these waters as part of comprehensive programs that will achieve no net loss of wetlands, while also providing grant funding for states and tribes to assume more decision-making authority in waters that remain subject to the CWA.

Research

In FY 2004, EPA's drinking water research program will continue to conduct research to reduce the uncertainties of risk associated with exposure to microbial contaminants in drinking water and improve analytical

methods and risk assessments to control risks posed by drinking water contamination. As required by the SDWA amendments, the first Contaminant Candidate List (CCL) was published in 1998 and included nine microbial contaminants in its Research Priorities Category that require more data before a regulatory determination could be made. The drinking water research program will continue to focus on chemical and microbial contaminants on current and future CCLs. Significant data gaps still exist on the occurrence of harmful microbes in source and distribution system water, linkages between water exposure and infection, and the effectiveness of candidate treatment technologies to remove and inactivate these contaminants. Research efforts will also continue to support arsenic-specific research and development of more cost-effective treatment technologies for the removal of arsenic from small community drinking water systems. This work will include strategies for the acceptable control of water treatment residuals enriched with arsenic.

Research to support the protection and enhancement of aquatic ecosystems and their biotic components includes understanding the structure, function, and characteristics of aquatic systems, and evaluating exposures and effects of stressors on those systems. EPA is also working to develop biological and landscape indicators of ecosystem condition, sources of impairment, stressor response/fate and transport models and options for managing stressors and their sources. Through the development of a framework for diagnosing adverse effects of chemical pollutants in surface waters, EPA will be able to evaluate the risks posed by chemicals that persist in the environment and accumulate in the food chain, threatening wildlife and potentially human health. The Agency will also develop and evaluate more cost-effective technologies and approaches for managing sediments, and evaluate management options for watershed restoration of TMDLs for other significant stressors (e.g., nutrients, pathogens and toxic compounds). Finally, research to address uncertainties associated with determining and reducing the risks to human health of the production and application of treated wastewater sludge (biosolids) to land for use as fertilizers is emerging as an area of renewed importance for the Agency.

Another area of research will focus on growing evidence of the risk of infectious diseases resulting from exposure to microbes in recreational waters. Exposure to these diseases is of particular concern after major rainfall events that cause discharges from both point and non-point sources. These events pose significant risks to human and ecological health through the uncontrolled release of pathogenic bacteria, protozoans, and viruses, as well as a number of potentially toxic, bioaccumulative contaminants. EPA will develop and validate effective watershed management strategies and tools for controlling wet weather flows (WWFs), including: 1) new and improved indicator methods to describe the toxic inputs to watersheds from WWFs; 2) methods to utilize condition and diagnostic ecological indicators in evaluating wet weather flow management strategies in preventing degradation of water and sediment quality by contaminated runoff; 3) methods for diagnosing multiple stressors in watershed ecosystems; and 4) evaluation of low cost watershed best management practices to evaluate risks associated with various control technologies for wet weather flows. This will enable EPA to provide states with consistent monitoring methods, standardized indicators of contamination, and standardized definitions of what constitutes a risk to public health.

External Factors

Drinking Water and Source Water

The adoption of health-based and other programmatic regulations by drinking water agencies is an important external factor. The 53 states and territories that have primary enforcement authority (primacy) for drinking water regulations must have sufficient staff and resources to help public water systems implement, and comply with, drinking water regulations. As authorized in the enabling legislation for the DWSRF, states may use funds set-aside from the DWSRF for state drinking water implementation activities. However, for many states the need to preserve DWSRF funding to close the infrastructure gap is more important. A related challenge is the cost of providing safe drinking water: The 2001 Drinking Water Needs Survey (DWNS) estimates drinking water infrastructure needs at $150.9 billion over the next 20 years.

Although the 1996 SDWA expanded source water protection to include surface as well as ground water sources of drinking water, the implementation of source water protection programs is not mandated under SDWA. In FY 2004 and beyond, as the statutorily mandated source water assessments are completed, and more states and communities take voluntary measures to implement contamination prevention programs, the Agency will become increasingly dependent on its partnerships with states, tribes and communities to achieve national source water protection goals.

Full implementation of the Underground Injection Control (UIC) program, including 1999 regulations for two types of shallow injection wells, depends on effective state and local participation. Because of the sheer number of shallow injection wells - - approximately 700,000 nationwide - - that must be inventoried and managed, implementation of the overall UIC program could be affected by continuing resource constraints at the state and Federal levels. In addition, the Agency has full or partial direct implementation responsibility for 17 states, the District of Columbia and all tribes.

Fish and Recreational Waters

The CWA does not require that states or tribes operate fish advisory or beach protection programs. The Agency's role is primarily to support them through guidance, scientific information, and technical assistance. EPA cannot take regulatory action to assure that states and tribes conform to fish consumption advisory guidance; therefore, success depends on voluntary state/Tribal/local commitment to achieving these goals. The Agency will continue to develop scientifically sound water quality criteria to protect human health in order to reduce the number of fish advisories and beach advisories or closures necessary in the future.

The Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 authorizes Federal funds for states and tribes to monitor pathogens at coastal and Great Lakes beaches and notify the public of advisories or closures. However, the states and tribes are not required to operate a program if they do not accept Federal funds. The Agency expects that all 35 eligible states or territories will continue operating a Federally funded program in FY 2004.

One way of determining whether we have reduced the consumption of contaminated fish and shellfish is to find out if people eat the fish they catch from waters where fish advisories have been issued. In order to determine whether we have reduced exposure to contaminated recreational waters, we also need to know if people comply with beach closure notices when they are issued. Acquiring statistical evidence for such determinations is difficult. For the fish advisory program, this information has been collected by some states, and is being reviewed to provide insight to state and Tribal advisory programs on how they can improve their programs. For the beach programs, this information will be collected for those states or tribes, which have applied for BEACH Act grants. However, this information will only reflect coastal and Great Lakes beaches in those states and tribes that have received grants.

Without comprehensive, consistent monitoring of all the Nation's waters, we do not know how many waters should be under advisory or how many beaches should be closed. The resource demands of implementing a comprehensive monitoring program pose a significant challenge for the states and could be a mitigating factor for success in this area.

Watersheds and Wetlands

EPA's efforts to meet our watershed protection objective are predicated on strengthening and broadening our relationships with our Federal, state, Tribal, and local partners. Because of the vast geographic scope of water quality and wetlands impairments and the large number of partners upon whose efforts we depend, EPA must continue to build lasting, working relationships with all stakeholders including communities, individuals, business, state and local governments and tribes. EPA's ability to meet this objective will depend on the success of state and local regulatory and non-regulatory programs and nationwide efforts to provide and use a broad range of policy, planning, and scientific tools to establish local goals and assess progress.

Given the interrelations of the Federal government's environmental protection and stewardship agency and programs, Federal agencies must work together with states and tribes to maximize achievements. Without continued government-wide coordination and commitment, we will not meet our water quality objectives. For example, marshaling Farm Bill conservation programs to tackle state water quality priorities is crucial, particularly to enhancement of state NPS management programs. Following our FY 2003 CWA Section 319 grant guidance, states are developing watershed plans for priority impaired bodies of water that delineate the specific technical and financial resources required to enable implementation. The states will also need to continue efforts to overcome historical institutional barriers to achieve full implementation of their coastal NPS control programs as required under the CZARA.

States and tribes, with increased EPA grant support, will assume more responsibility for comprehensive protection of wetlands and other waters, including those the Supreme Court has determined are not subject to CWA protections. Responding to the National Academy of Sciences finding that the CWA Section 404 program fails to achieve no net loss, EPA and the Corps of Engineers, with other agencies and stakeholders, will improve the program's compensatory mitigation features. EPA will develop methods and provide technical assistance and grant support for monitoring and reporting on the condition of wetlands.

EPA will continue to improve our understanding of the environmental baseline and our ability to track progress against goals, which also depends on external parties. While current state CWA Section 305(b) reporting provides some assessment of water quality, we must continue to provide support to our partners and stakeholders in their efforts to work with state water quality agencies to improve measurement tools and data-sharing capabilities, including facilitating consolidation of CWA Section 305(b) reports and CWA Section 303(d) lists. EPA is working with states to improve our tracking and measurement of NPS load reductions from the CWA Section 319 program. Also, as states adopt TMDLs, we will have specific targets for point source and NPS load reductions needed to meet water quality standards in impaired waters.

Point Sources

Clean water goals associated with reduction of pollutant discharges from point sources through the NPDES permitting program rely heavily on EPA's partnership with states as 45 states and one territory are currently authorized to carry out the NPDES program. EPA will also work with the states to reduce pollution from

onsite—/decentralized wastewater treatment systems, including septic systems. EPA estimates that between 10 and 30 percent of all onsite/decentralized systems nationwide are not performing as designed, treating waste inadequately, and therefore failing to protect public health and the environment.

Resource Summary
(Dollars in thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Clean and Safe Water	**$3,870,039.5**	**$3,214,674.2**	**$2,952,472.9**	**($262,201.3)**
Safe Drinking Water, Fish and Recreational Waters	$1,355,114.4	$1,148,425.1	$1,198,942.3	$50,517.2
Protect Watersheds and Aquatic Communities	$474,725.2	$435,814.7	$479,787.4	$43,972.7
Reduce Loadings and Air Deposition	$2,040,199.9	$1,630,434.4	$1,273,743.2	($356,691.2)
Total Workyears	**2,681.8**	**2,742.8**	**2,776.4**	**33.6**

Objective 1: Safe Drinking Water, Fish and Recreational Waters

By 2005, protect public health so that 95% of the population served by community water systems will receive water that meets drinking water standards, consumption of contaminated fish and shellfish will be reduced, and exposure to microbial and other forms of contamination in waters used for recreation will be reduced.

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Safe Drinking Water, Fish and Recreational Waters	**$1,355,114.4**	**$1,148,425.1**	**$1,198,942.3**	**$50,517.2**
Environmental Program & Management	$130,668.7	$110,143.9	$122,107.8	$11,963.9
Science & Technology	$135,442.5	$69,230.1	$87,734.5	$18,504.4
State and Tribal Assistance Grants	$1,089,003.2	$969,051.1	$989,100.0	$20,048.9
Total Workyears	**854.8**	**887.4**	**921.9**	**34.5**

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Beach Grants	$10,000.0	$10,000.0	$10,000.0	$0.0
Congressionally Mandated Projects	$143,897.2	$0.0	$0.0	$0.0
Drinking Water Implementation	$38,332.9	$38,935.0	$44,338.7	$5,403.7
Drinking Water Regulations	$28,597.4	$30,034.0	$31,434.9	$1,400.9
Facilities Infrastructure and Operations	$12,116.5	$12,372.6	$13,196.1	$823.5
Fish Contamination/Consumption	$2,764.8	$2,788.4	$2,831.2	$42.8
Homeland Security-Critical Infrastructure Protection	$89,740.5	$21,946.5	$32,389.1	$10,442.6

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Homeland Security-Preparedness, Response and Recovery	$1,317.6	$0.0	$10,768.2	$10,768.2
Legal Services	$1,206.3	$1,317.6	$1,362.4	$44.8
Management Services and Stewardship	$4,025.0	$4,240.2	$4,323.7	$83.5
Planning and Resource Management	$0.0	$0.0	$41.4	$41.4
Preventing Contamination of Drinking Water Sources	$23,470.2	$22,096.8	$23,311.9	$1,215.1
Regional Management	$357.7	$309.2	$755.1	$445.9
Safe Drinking Water Research	$45,579.5	$49,491.0	$49,231.3	($259.7)
Safe Recreational Waters	$834.4	$842.7	$858.3	$15.6
State PWSS Grants	$93,100.2	$93,100.2	$105,100.0	$11,999.8
State Underground Injection Control Grants	$10,950.9	$10,950.9	$11,000.0	$49.1
Water Infrastructure: Puerto Rico	$0.0	$0.0	$8,000.0	$8,000.0
Water Infrastructure: Drinking Water State Revolving Fund (DW-SRF)	$850,000.0	$850,000.0	$850,000.0	$0.0

Annual Performance Goals and Measures

Safe Drinking Water

In 2004 85 percent of the population served by community water systems will receive drinking water meeting health-based standards promulgated in or after 1998.

In 2004 92% of the population served by community water systems will receive drinking water meeting all health-based standards in effect as of 1994, up from 83% in 1994.

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In 2002 91% of the population served by community water systems received drinking water meeting all health-based standards in effect as of 1994.

In 2002 Final FY 02 numbers will not be available until mid-January. SDWIS reports quarter behind.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Percent of population served by community drinking water systems with no violations during the year of any Federally enforceable health-based standards that were in place by	91	92	92	% Population

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
1994.				
Population served by community water systems providing drinking water meeting health-based standards promulgated in or after 1998.	N/A	85	85	% Population

Baseline: In 1998, 85% of the population that was served by community water systems and 96% of the population served by non-community, non-transient drinking water systems received drinking water for which no violations of Federally enforceable health standards had occurred during the year.

Drinking Water Systems Operations

In 2004 Enhance homeland security by securing the nation's critical drinking water infrastructure.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Percent of population and number of CWSs-serving more than 50,000 but less than 100,000 people have certified the completion of their vulnerability assessment and submitted a copy to EPA.			100/~460	% pop/# CWSs
Percent of population and number of CWSs-serving more than 50,000 but less than 100,000 people have certified the completion of the preparation or revision of their emergency response plan.			100/~460	% pop/# CWSs
Percent of population and number of CWSs-serving more than 3,300 but less than 50,000 people have certified the completion of their vulnerability assessment and submitted a copy to EPA.			100/~7,475	% pop/# CWSs

Baseline: These measures covering medium-sized community water systems will be reported for the first time in FY 2004, which will establish the baselines.

River/Lake Assessments for Fish Consumption

In 2004 Reduce consumption of contaminated fish by increasing the information available to States, Tribes, local governments, citizens, and decision-makers.

In 2003 Reduce consumption of contaminated fish by increasing the information available to States, Tribes, local governments, citizens, and decision-makers.

In 2002 14% of the nation's river miles and 28% of nation's lake acres have been assessed to determine if they contain fish and shellfish that should not be eaten or should be eaten in only limited quantities.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Lake acres assessed for the need for fish advisories and compilation of state-issued fish consumption advisory methodologies. (cumulative)	28	29	32	% lake acres
River miles assessed for the need for fish consumption advisories & compilation of state-issued fish consumption advisory methodologies. (cumulative)	14 %	15%	16%	River miles

Baseline: In 1999, 7% of the Nation's rivers and 15% of the Nation's lakes were assessed to determine if they contained fish that should not be eaten or should be eaten in only limited quantities. In September 1999, 25 states/tribes are monitoring and conducting assessments based on the national guidance to establish nationally consistent fish advisories. In the 2000 Report to Congress on the National Water Quality Inventory, 69% of assessed river and stream miles; 63% of assessed lake, reservoir, and pond acres; and 53% of assessed estuary square miles supported their designated use for fish consumption. For shell fish consumption, 77% of assessed estuary square miles met this designated use.

Increase Information on Beaches

In 2004 Reduce human exposure to contaminated recreation waters by increasing the information available to the public and decision-makers.

In 2003 Reduce human exposure to contaminated recreation waters by increasing the information available to the public and decision-makers.

In 2002 Reduced exposure to contaminated recreation waters by providing monitoring and closure data on 2,455 beaches to the public and decision-makers.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Beaches for which monitoring and closure data is available to the public at http://www.epa.gov/waterscience/beaches/. (cumulative)	2,445	2,550	2,650	Beaches

Baseline: By the end of FY1999, 33 states had responded to EPA's first annual survey on state and local beach monitoring and closure practices and EPA made available to the public via the Internet information on conditions at 1,403 specific beaches. In the 2000 Report to Congress on the National Water Quality Inventory, 72% of assessed river and stream miles; 77% of assessed lake, reservoir, and pond acres; and 85% of assessed estuary square miles met their designated uses for recreation (primary contact).

Source Water Protection

In 2004 Advance States' efforts with community water systems to protect their surface and ground water resources that are sources of drinking water supplies.

In 2003 39,000 community water systems (representing 75% of the nation's service population) will have completed source water assessments and 2,600 of these (representing 10% of the nation's service population) will be implementing source water protection programs.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Number of community water systems and percent of population served by those CWSs that are implementing source water protection programs.		10%/2,600	25% / 7,500	% pop/systems

Baseline: EPA has defined implementation as undertaking 4 or more of 5 stages of source water protection. About 268 million people are estimated to be served by CWSs in 2002.

Research

Drinking Water Research

In 2004 Provide final reports on the performance of arsenic treatment technologies and/or engineering approaches to the Office of Water and water supply utilities to aid in the implementation of the arsenic rule and the protection of human health.

In 2002 EPA produced scientific reports to support the development of the next Contaminant Candidate List of chemicals and pathogens for potential regulatory action and research. These reports will help ensure that future regulations address the contaminants of greatest public health concern.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Provide method(s) for CCL related pathogens in drinking water for use in the Unregulated Contaminant Monitoring Rule.	1			journal article
Final reports of full-scale demonstrations of arsenic treatment technologies.			09/30/04	reports

Baseline: On October 31, 2001 EPA announced that the final standard for arsenic in drinking water of ten parts per billion (10 ppb) would become effective on February 22, 2002. Nearly 97 percent of the water systems affected by this rule are small systems that serve less than 10,000 people each. These small systems have limited resources and need more cost-effective technologies to meet the

new standard. A total of $20 million has been allocated or planned in FY02 and FY03 for research and development of more cost-effective technologies, as well as technical assistance and training to operators of small systems to reduce their compliance costs. In FY 2004 EPA will provide final reports of full-scale demonstrations of arsenic treatment technologies to aid in the implementation of the arsenic rule and the protection of human health.

Homeland Security - Water Security Research

In 2004 Verify two point-of-use drinking water technologies that treat intentionally introduced contaminants in drinking water supplies for application by commercial and residential users, water supply utilities, and public officials.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Verify two treatment technologies for application in buildings by commercial and residential users, utilities, and public officials to treat contaminants in drinking water supplies.			2	verifications

Baseline: These technology verifications are being conducted in support of EPA's Draft Strategic Plan for Homeland Security and are focused on the water security tactic in the strategy. Evaluations of point-of-use drinking water treatment technologies have been ongoing for years and technologies are commercially available to remove disagreeable tastes and odors, and capture or neutralize contaminants. These point-of-use treatment technologies are now being considered as an additional means of treating water that may have been exposed to biological or chemical contaminants through terrorist attacks. What makes this undertaking unique is that the Environmental Technology Verification (ETV) program will formally verify such technologies using a standard protocol developed by a group of stakeholders, who are considered experts on such verifications. This additional line of defense can help reassure home and building owners and users, water supply utilities, and public officials that the drinking water supply in a residential or commercial building can be treated one more times once it enters the water distribution system of a building.

Verification and Validation of Performance Measures

Performance Measure: Population served by community water systems with no violations during the year of any Federally-enforceable health-based standards that were in place by 1994 and Population served by community water systems that receive drinking water meeting health-based standards promulgated in 1998.

Performance Database: Safe Drinking Water Information System- Federal Version (SDWIS or SDWIS-FED)

Data Source: Agencies with Primacy for the Public Water Supply Supervision (PWSS) Program including States, EPA Regional Offices with Direct Implementation (DI) responsibility for states and Indian tribes, and the Navajo Nation Indian Tribe (the Navajo is expected to begin reporting directly to EPA in FY 2003). Primacy Agencies (States) collect the data from the regulated water systems, determine compliance, and report a subset of the data to EPA (primarily inventory and violations). EPA is the secondary user of this data. Water quality data from other collectors of data (third parties) related to drinking water, such as source water or wastewater discharge, is not used in PWSS program measures.

Methods, Assumptions and Suitability: The analytical methods that drinking water systems use to collect violations data are specified in the technical guidance associated with each drinking water regulation. Laboratories must be certified by the Primacy Agency (State) to analyze drinking water samples and are subject to periodic performance audits by the State. The performance measures are based on data reported by individual systems to states, which supply the information to EPA through SDWIS. EPA then verifies and validates the data for 10 to 12 states per year, according to the PWSS Data Verification Protocol (Version 9.0, 1999).[1] To measure program performance, EPA aggregates the SDWIS data into a national statistic on overall compliance with health-based drinking water standards. This statistic compares the total population served by community water systems meeting all health-based standards to the total population served by all public water systems (which includes non-community water systems).

EPA's Office of Ground Water and Drinking Water (OGWDW) is currently conducting an assessment of information needs to determine what additional data would be valuable to manage the national drinking water program. For example, parametric data (data on the quality of water supplies) in combination with violations data would improve the current measures, but also would increase primacy states' reporting requirements. As a result, the value of collecting new parametric and monitoring data must be weighed against the additional reporting burden on primacy states. OGWDW is conducting a data reliability analysis to determine the impact of data quality on the annual performance measures. At this time, considering the limitations of SDWIS and comprehensive activities to improve the quality and completeness of the SDWIS data, OGWDW believes that SDWIS data are suitable for year-to-year comparisons of program performance using the selected performance measures.

[1] Enyeart, R. (revised June 1999). EPA protocol for participation in a PWSS program data verification (Version 9.0). Washington, DC: U.S. Environmental Protection Agency. Internal document in perpetual draft referred to as the PWSS Data Verification Protocol.

QA/QC Procedures: SDWIS-FED has numerous edit checks built into the software to reject erroneous data. There are quality assurance manuals for states and Regions to follow to ensure data quality. The manuals provide standard operating procedures for conducting routine assessments of the quality of the data, communication and follow-up actions to be conducted with the state to achieve timely corrective action(s). EPA offers training to states on reporting requirements, data entry, data retrieval, and error correction. User and system documentation is produced with each software release and is maintained on EPA's web site. SDWIS-FED documentation includes data entry instructions, data element dictionary application, Entity Relationship Diagrams, a user's manual, and regulation-specific reporting requirements documents. System, user, and reporting requirements documents can be found online atwww.epa.gov/safewater. System and user documents are accessed via the database link and specific rule reporting requirements documents are accessed via the regulations, guidance, and policy documents link. In addition, EPA provides specific error correction and reconciliation support through a troubleshooter's guide, a system-generated summary with detailed reports documenting the results of each data submission, and an error code database for states to use when they have questions on how to enter or correct data. A user support hotline is available 5 days a week to answer questions and provide technical assistance. At least one EPA staff person in each EPA regional office serves as the SDWIS-FED Regional Data Management Coordinator to provide technical assistance and training to the states on all aspects of information management and required reporting to EPA. State primacy agencies' information systems are audited on an average schedule of once every 3 years.

Data Quality Review: Management System Reviews (MSRs) of the Office of Ground Water and Drinking Water's Quality Management Plan (QMP), which includes quality assurance/quality control (QA/QC) for SDWIS, are carried out every three years. The Quality Assurance Division coordinates this effort. EPA last completed an MSR in July 1999 and will repeat the review in FY 2002. The 1999 MSR findings related to SDWIS/FED were all positive. EPA also completed a data reliability assessment (QA audit) of the 1996–1998 SDWIS-FED data in FY 2000. The Data Reliability Action Plan (DRAP, described below), completed in FY 2000, was developed to address deficiencies identified in the 1999 data reliability assessment.[2] The action plan was implemented in 2001 and continues to be implemented and revised as appropriate. The most recent revision was made in October 2002.

EPA, states, and stakeholders have expanded on the DRAP through the development of a more comprehensive OGWDW Information Strategy that tackles additional data quality problems.[3] Components of the OGWDW Information Strategy include (1) simplifying and/or standardizing regulatory reporting requirements where possible; (2) reevaluating EPA's philosophy of system edits; and (3) continuing to improve tools and processes for creating and transferring data to EPA, such as incorporating newer technologies, and adapting the Agency's Enterprise Architecture Plan, to integrate data and the flow of data from reporting entities to EPA via a central data exchange (CDX) environment. The Information Strategy could be considered Phase II of the DRAP, and it sets the direction for a comprehensive modernization of SDWIS over the next 3 to 5 years.

Finally, individual data quality reviews are conducted by EPA and its contracted auditors on state primacy agencies' information systems. These audits are conducted between every 2 to 4 years depending on the resources available and programmatic need in the region. Each state's overall information system is evaluated with special emphasis on its compliance determinations (interpretation and application of regulatory requirements, which includes designation of violations) and data flow (primacy agency's compliance with record-keeping and reporting requirements to EPA). Continuous data quality reviews include data quality estimates based on the results of data verifications, timeliness and completeness of violation reporting, completeness of various required inventory data elements, and completeness of reporting for specific rules.

Data Limitations: Currently SDWIS-FED is an Aexceptions database that focuses exclusively on public water systems' noncompliance with drinking water regulations (health-based and program). Primacy states implement drinking water regulations with the support of the Public Water System Supervision (PWSS) grant program and determine whether public water systems have violated: maximum contaminant levels (MCL); treatment technique requirements; consumer notification requirements; or monitoring-and-reporting requirements. Primacy agencies report those violations through SDWIS.

Recent state data verification and other quality assurance analyses indicate that the most significant data quality problem is under-reporting to EPA of monitoring and health-based standards violations and inventory characteristics, such as water sources and/or latitude/longitude for all sources. The most significant under-reporting occurs in monitoring violations. Even though those are not covered in the health based violation category, which is covered by the performance measure, failures to monitor could mask treatment technique and MCL violations. Such under-reporting of violations limits EPA's ability to: 1) accurately quantify the number of sources and treatments applied, 2) undertake geo-spatial analysis, and 3) integrate and share data with other data systems. The under-reporting limits EPA's ability to precisely quantify the population served by systems, which are meeting the health-based standards. Currently, the program office is assessing the percentage of unreported health-based violations and calculating

[2] Haertel, F. (October 2002). Data Reliability Action Plan. U.S. Environmental Protection Agency. Office of Groundwater and Drinking Water internal work plan document.

[3] U.S. EPA. Office of Groundwater and Drinking Water Information Strategy (under revision). See Options for OGWDW Information Strategy (Working Draft) EPA 816-O-01-001 February 2001 at the following web site http://epa.gov/safewater at the information strategy link.

adjustments to the performance data that might be required for future reports. The population data has been determined to be of high quality.

The DRAP and the Information Strategy Plan address many of the underlying factors contributing to the data limitations. Additional options under consideration include:

1. increasing the focus on state compliance determinations and reporting of complete, accurate and timely violations data;

2. developing incentives to improve the accuracy, completeness, and timeliness of state reporting;

3. Continuing analyses of data quality; and

4. Requiring the report of parametric data (analytical results used to evaluate compliance with monitoring regulations and compliance with treatment techniques and maximum contaminant levels), monitoring schedules, and waiver information assigned to water systems by the state primacy agency. This information would allow compliance determinations to be made by EPA for quality assurance or state oversight purposes. Potential violation under reporting could be identified through the availability of this information and appropriate corrective actions implemented.

Error Estimate: Analyses are under way to determine the impact of data quality on the performance measures and are scheduled for completion by the end of FY 2002. The analysis will include data from an additional round of audits to provide a more accurate error estimate compared to the results of earlier baseline audits.

New/Improved Data or Systems: With a newly developed information strategy developed by EPA in partnership with the states and major stakeholders, several improvements to SDWIS are underway. The DRAP is an integral part of the Information Strategy Plan, currently under development.

First, EPA will continue to work with states to implement the Data Reliability Action Plan (previously referenced), a multi-step approach to improve the quality and reliability of data in SDWIS-FED. The DRAP already has improved the completeness, accuracy, timeliness, and consistency of the data in SDWIS-FED through: 1) training courses for SDWIS-FED data entry, error correction, and regulation specific compliance determination and reporting requirements, 2) specific DRAP analyses, follow-up activities and state-specific technical assistance, 3) increased number of data verifications conducted each year, and 4) creation of various quality assurance reports to assist regions and states in the identification and reconciliation of missing, incomplete, or conflicting data.

Second, more states will use SDWIS-STATE, a software information system jointly designed by states and EPA, to support states as they implement the drinking water program. SDWIS-STATE is the counterpart to EPA's Federal drinking water information system, SDWIS-FED, and employs many of the same edit criteria and enforces many of the mandatory data elements.[4] If the SDWIS-STATE system is fully utilized by a state, the information it holds would meet EPA's minimum data requirements. SDWIS-STATE contains a utility that creates the necessary output to report to SDWIS-FED, which aids in easing the states' reporting burden to EPA, and in the process minimizes data conversion errors and improves data quality and accuracy. In addition, a Web-enabled version of SDWIS-STATE and a data migration application that can be used by all states to process data for upload to SDWIS-FED are being developed. EPA estimates that 40 states will be using SDWIS-STATE for data collections by FY 2004.

Third, EPA is modifying SDWIS-FED to (1) streamline its table structure, which simplifies updates and retrievals, (2) minimize data entry options that result in complex software and prevent meaningful edit criteria, and (3) enforce compliance with permitted values and Agency data standards through software edits, all of which will improve the accuracy of the data.

Fourth, EPA has developed a data warehouse system that is optimized for analysis, data retrieval, and data integration from other data sources like information from data verifications, sample data, source water quality data (e.g., United States Geological Survey [USGS] data), and indicators from inspections conducted at the water systems. It will improve the program's ability to use information to make decisions and effectively manage the program.

Finally, EPA, in partnership with the states, is developing information modules on other drinking water programs: the Source Water Protection Program, the Underground Injection Control Program, and the Drinking Water State Revolving Fund.

[4] SDWIS/STATE (Version 8.1) is an optional Oracle data base application available for use by states and EPA regions to support implementation of their drinking water programs. See U.S. Environmental Protection Agency. (July 2002). Data & Databases. Drinking Water Data & Databases. Information available on the Internet: http://www.epa.gov/safewater/databases.html

These modules will be integrated with SDWIS to provide a more comprehensive data set with which to assess the nation's drinking water supplies, a key component of the goal.

References:

Plans

- SDWIS-FED does not have a Quality Assurance Project Plan - it is a legacy system which has "evolved" since the early 80s prior to the requirement for a Plan. The SDWIS-FED equivalent is the Data Reliability Action Plan.
- Information Strategy Plan - SDWIS-FED
- Quality Management Plan
- Enterprise Architecture Plan

Reports

- 1999 SDWIS/FED Data Reliability Report
- 2003 SDWIS/FED Data Reliability Report - contains the Data Reliability Action Plan and status report
- PWSS Management Report (quarterly)
- 1999 Management Plan Review Report

Guidance Manuals, and Tools

- PWSS SDWIS/FED Quality Assurance Manual
- Various SDWIS-FED User and System Guidance Manuals (includes data entry instructions, data On-line Data Element Dictionary-a database application, Error Code Data Base (ECDB) - a database application, users guide, release notes, etc. All are located on the OGWDW web site listed below)
- Regulation Specific Reporting Requirements Guidance

Web site addresses

- OGWDW Internet Site www.epa.gov/safewater/data.html contains access to the information systems and various guidance, manuals, tools, and reports.
- Sites of particular interest are: www.epa.gov/safewater/data/getdata.html contains information for users to better analyze the data, and www.epa.gove/safewater/sdwis_fed/index.html contains reporting guidance, system and user documentation and reporting tools for the SDWIS-FED system.

Performance Measure: Number of community water systems and percent of population served by those CWS that are implementing source water protection programs.

Performance Database: Under Section 1453 of the Safe Drinking water Act (SDWA), EPA's 1997 National Guidance on Source Water Assessment and Protection Programs requires states to report to EPA on four of the six elements of a source water protection program for each public water system (PWS). The four elements are: 1) delineation of the source water area, 2) inventory of actual and potential sources of contamination, 3) susceptibility of the water supply to contamination, and 4) release of the assessment data to the public. EPA's Regional Offices also track, based on an agreement with states, the final two elements of a source water protection program: 1) whether each public water system with the first four elements completed also is taking measures to prevent, reduce, or eliminate contamination threats to source water, and 2) whether the public water system is developing contingency plans should contamination occur. The Agency currently develops a national summary of data on the progress of state source water protection programs using these six data elements. A drinking water system that reports all six elements is considered to be implementing a source water protection program.

EPA now holds one year of data (for FY 2001) for each state and Puerto Rico in an Excel database. Starting in FY 2004 primacy states with approved source water programs will begin using a SDWIS-based source water protection module that will be operational by the end of FY 2003 to submit all assessment and contamination prevention data to the Agency. [Not publicly available. Contact the Drinking Water Protection Division at 202-564-3797.]

Data Source: Each state reports to EPA's Regional Offices the total number of public water systems that have completed each of the six elements.

Methods, Assumptions and Suitability: The source water assessment components of this measure (delineation, source inventory, susceptibility analysis, and availability to public) are defined in EPA's 1997 guidance. However, the states collect the data in

different ways. Some states collect the data by communicating directly with drinking water system operators. Others use statistical sampling or best professional judgment. EPA therefore assumes that the statistics on percentage of the population served by each PWS are either: 1) directly related to specific community water systems in a data base; 2) directly related to the community water systems which are sampled in a statewide statistical sample; or 3) estimated using best professional judgment. EPA also assumes that these data may be aggregated to report a national measure of performance and are suitable for year-to-year comparisons of progress. The data are reliable to the extent that each state is accurately tracking the number of completed elements for each PWS.

QA/QC Procedures: There is currently no QA/QC procedure for the collection of source water data. EPA continues to work with states to obtain a description of their methods of collecting and verifying information.

Data Quality Reviews: As primacy states increase their use of the source water module in FY 2004 and beyond, the source water assessment data will be included in the data quality analyses conducted under the SDWIS Data Reliability Action Plan (DRAP) (previously referenced) and the drinking water program's Information Strategy (previously referenced). Under the umbrella of these analyses, the EPA Regions can conduct data quality reviews of the state data and work with the states to resolve any data exceptions. As a result, EPA expects the quality of data on assessments and contamination prevention activities to improve over time.

Data Limitations: There is no standard methodology or protocol for collecting, verifying and validating the data, which are based on system-level information contained in state databases. In addition, the SDWA only requires source water assessments, not protection activities, so EPA guidance is limited to the first four data elements, and states provide data on source water protection activities and contingency plans on a voluntary basis. In the absence of an established methodology, states may use different data collection protocols, and may apply different analytical methods to evaluate the data. For example, some states may require each public water system (PWS) to report data, while others may institute a voluntary process. Further, those states that use statistical surveys may choose samples differently. This variability may lead to inaccuracies or incomplete data.

Error Estimate: There is no basis for making an error estimate for this performance measure given the data limitations described above.

New/Improved Data or Systems: EPA is developing a new source water module (repository) for data on source water assessments and protection activities it receives from the States through data exchange agreements. This module should be operational by the end of FY 2003, and states will begin reporting source water information to EPA through this module in FY 2004, which will be compatible with PWS-level inventory data already housed in SDWIS/Fed. EPA and states also are developing internal measures and data elements to characterize the aggregated results of the source water assessments. Finally, EPA and states are jointly developing performance measures and data elements to estimate the risk reduction achieved by communities that implement source water protection programs.

References: N/A.

Performance Measure: Cumulative lake acres assessed for the need for fish advisories and compilation of state/Tribal-issued fish consumption advisory methodologies; Cumulative River miles assessed for the need for fish consumption advisories and compilation of state/Tribal-issued fish consumption advisory methodologies; states/tribes monitoring and conducting assessments based on the national guidance to establish nationally consistent fish advisories.

Performance Database: National Listing of Fish and Wildlife Advisories. The database includes fields identifying the waters for which fish consumption advisories have been issued. The EPA Total Waters database is used to calculate the spatial extent of the fish advisory. This information is updated continually as states and tribes issue or revise advisories. Metadata are also available describing methodologies used by states and tribes for establishing advisories.

Data Source: State and Tribal governments.

Methods, Assumptions and Suitability: The percentage of lake acres and river miles assessed is the ratio of the surface area of lakes and/or rivers for which states submit data to the National Listing of Fish & Wildlife Advisories database and the total water surface area in the United States. It is a simple mathematical calculation.

QA/QC Procedures: A standard survey has been approved by OMB, which is available on the Internet for electronic submission. A password is issued to ensure the appropriate party is completing the survey. EPA has national guidance for states and tribes on developing and implementing quality assurance practices for the collection of environmental information related to fish advisories. This guidance helps assure data quality.

Data Quality Review: EPA reviews advisory entries and responses to the survey to ensure the information is complete, then follows-up with the state or local government to obtain additional information where needed. However, the Agency cannot verify the accuracy of the voluntary information state and local governments provide.

Data Limitations: Participation in this survey and collection of data is voluntary. While the voluntary response rate has been high, it does not capture the complete universe of advisories.

Error Estimate: Because submitting data to the National Listing of Fish & Wildlife Advisories database is voluntary, the Agency cannot be certain that the database contains information on 100% of the assessed waters in the United States. Therefore, we may be understating the total amount of waters assessed, the magnitude of which is not known.

New/Improved Data or Systems: A proposed enhancement to the system is the use of a GIS procedure to calculate the spatial extent of geo-referenced advisories based on the National Hydrography Dataset (NHD). This procedure will provide size information for the vast majority of waterbody-specific advisories. In cases where the state has already provided information, the state's sizes will be retained rather than replaced with results from the NHD calculations.

References: The National Listing of Fish & Wildlife Advisories database is on the Internet at http://map1.epa.gov/.

Performance Measure: Cumulative number of beaches for which monitoring and closure data is available to the public at http://www.epa.gov/waterscience/beaches/.

Performance Database: National Health Protection Survey of Beaches Information Management System. The database includes fields identifying the beaches for which monitoring and notification information is available. The database also identifies those states that have received a BEACH (Beaches Environmental Assessment and Coastal Health) Act [P.L. 106-284] grant. This information is updated annually.

Data Source: Data are obtained from National Health Protection Survey of Beaches, which is a voluntary collection of beach data along the coastal and Great Lake states and territories. State and local governments voluntarily provide the information. The survey began in 1997 with information on 1,021 beaches, and now includes records on 2,445 beaches. The database includes fields identifying the beaches for which monitoring and notification information is available.

Methods, Assumptions and Suitability: Performance is tracked using a simple count of the number of beaches responding to the survey.

QA/QC Procedures: A standard survey form, approved by OMB, is distributed by mail to coastal states, Great Lakes states, and county environmental and public health beach program officials. The form is also available on the Internet for electronic submission. In 2001, survey respondents comprised; 42% county, 31% city, 12% state, 6% district, 4% region, 2% National park, 2% state park, 1% other. When data are entered over the Internet by a state or local official, a password is issued to ensure the appropriate party is completing the survey. EPA reviews the survey responses to ensure the information is complete, then follows up with the state or local government to obtain additional information where needed. However, because the data are submitted voluntarily by state and local officials, the Agency cannot verify the accuracy of the information provided.

Participation in this survey and collection of data is voluntary and information has not been collected on the universe of beaches. The voluntary response rate was 88% in 2001(237 out of 269 contacted agencies responded). The number of beaches for which information was collected increased from 1,021 in 1997 to 2,445 in 2001. Participation in the survey will become a mandatory condition for grants awarded under the BEACH Act program (described below); however, state and local governments are not required to apply for a grant. Those states receiving a BEACH Act grant are subject to the Agency's grant regulations under 40CFR 31.45 which require states and tribes to develop and implement quality assurance practices for the collection of environmental information; these procedures will help assure data quality.

Data Quality Review: EPA reviews the survey responses to ensure the information is complete, then follows up with the state or local government to obtain additional information where needed. However, the Agency cannot verify the accuracy of the voluntary information state and local governments provide.

Data Limitations: Participation in this survey and collection of data is mostly voluntary. While the voluntary response rate has been high, it does not capture the complete universe of beaches. Participation in the survey will become a mandatory condition of grants awarded under the BEACH Act program (described below); however, state and local governments are not required to apply for a grant. Currently the Agency has data standards but procedures, methods, indicators, and thresholds can vary between jurisdictions because, to date, this has been a voluntary program. The Agency expects the limitations to diminish as more states apply for BEACH Act grants.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: With the passage of the BEACH Act of 2000, the Agency is authorized to award grants to states to develop and implement monitoring and notification programs consistent with Federal requirements. As the Agency awards these implementation grants, it will require standard program procedures, sampling and assessment methods, and data elements for reporting. To the extent that state governments apply for and receive these grants, the amount, quality, and consistency of available data will improve. In addition, the BEACH Act requires the Agency to maintain a database of national coastal recreation water pollution occurrences. The Agency will fulfill this requirement by revising the current database to include this new information. In revising the database, the Agency will be investigating modes for electronic exchange of information and reducing the number of reporting requirements.

References: http://www.epa.gov/waterscience/beaches/.

Performance Measure: Final reports of full-scale demonstrations of arsenic treatment technologies.

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: Reports

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

Performance Measure: Deliver verifications of two treatment technologies for application in buildings by commercial and residential users, utilities, and public officials to treat contaminants in drinking water supplies.

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: Verifications consist of the following steps:

1. Based on generic verification protocols if available, the specific test/QA plan for each product is developed and agreed to by EPA, the testing partner, and the vendors;

2. The product is tested using the procedures outlined in the test/QA plan;

3. Audits of the test event are conducted by EPA and the partners, and rigorous QA evaluations of the resulting test data are performed;

4. After testing and analysis, the partner drafts the verification statements and reports which are reviewed by EPA, the participating vendors, and peer reviewers; and

5. After addressing review comments and receiving approval from EPA management, EPA and the partner sign the verification statements.

Data Quality Reviews: Verifications

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

Statutory Authorities

Safe Drinking Water Act
Clean Water Act
Toxic Substances Control Act

Research

Safe Drinking Water Act
Clean Water Act
Toxic Substances Control Act

Objective 2: Protect Watersheds and Aquatic Communities

By 2005, increase by 175 the number of watersheds where 80 percent or more of assessed waters meet water quality standards, including standards that support healthy aquatic communities. (The 1998 baseline is 501 watersheds out of a national total of 2,262.)

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Protect Watersheds and Aquatic Communities	**$474,725.2**	**$435,814.7**	**$479,787.4**	**$43,972.7**
Environmental Program & Management	$198,157.5	$162,894.0	$179,114.8	$16,220.8
Hazardous Substance Superfund	$0.0	$25.7	$2.6	($23.1)
Science & Technology	$41,203.5	$38,592.9	$41,270.0	$2,677.1
State and Tribal Assistance Grants	$235,364.2	$234,302.1	$259,400.0	$25,097.9
Total Workyears	**1,000.5**	**988.8**	**989.3**	**0.5**

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Chesapeake Bay	$20,551.8	$20,650.8	$20,777.7	$126.9
Congressionally Mandated Projects	$33,107.4	$0.0	$0.0	$0.0
Ecosystems Condition, Protection and Restoration Research	$37,785.0	$38,592.9	$41,270.0	$2,677.1
Facilities Infrastructure and Operations	$5,673.6	$13,851.3	$13,870.8	$19.5
Great Lakes	$2,671.0	$2,684.7	$2,712.2	$27.5
Gulf of Mexico	$4,261.6	$4,327.4	$4,431.7	$104.3
Lake Champlain	$2,500.0	$954.8	$954.8	$0.0
Legal Services	$3,462.8	$3,755.0	$3,889.5	$134.5
Long Island Sound	$2,500.0	$477.4	$477.4	$0.0
Management Services and Stewardship	$11,763.0	$4,571.2	$3,062.3	($1,508.9)
Marine Pollution	$7,994.8	$8,170.7	$12,630.1	$4,459.4
National Estuaries Program/Coastal Watersheds	$24,521.3	$19,246.2	$19,094.2	($152.0)
Pacific Northwest	$1,003.8	$1,028.5	$1,072.5	$44.0
Planning and Resource Management	$0.0	$0.0	$574.1	$574.1

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Regional Management	$429.0	$450.5	$952.0	$501.5
South Florida/Everglades	$2,648.3	$2,665.5	$2,690.0	$24.5
State Pollution Control Grants (Section 106)	$192,476.9	$180,376.9	$200,400.0	$20,023.1
State Water Quality Cooperative Agreements	$18,958.2	$38,958.2	$19,000.0	($19,958.2)
State Wetlands Program Grants	$14,967.0	$14,967.0	$20,000.0	$5,033.0
TMDLs	$21,232.1	$21,433.2	$25,083.7	$3,650.5
Targeted Watershed Grants	$0.0	$0.0	$20,000.0	$20,000.0
Water Quality Criteria and Standards	$18,782.4	$19,127.2	$24,076.8	$4,949.6
Water Quality Monitoring and Assessment	$11,665.1	$11,967.7	$14,072.1	$2,104.4
Watershed Assistance	$7,821.6	$9,479.1	$9,395.6	($83.5)
Wetlands	$17,829.8	$18,381.9	$19,299.9	$918.0

Annual Performance Goals and Measures

Watershed Protection

In 2004 By FY 2005, Water quality will improve on a watershed basis such that 625 of the Nation's 2,262 watersheds will have greater than 80 percent of assessed waters meeting all water quality standards, up from 500 watersheds in 1998.

In 2003 By FY 2003, Water quality will improve on a watershed basis such that 600 of the Nation's 2,262 watersheds will have greater than 80 percent of assessed waters meeting all water quality standards, up from 500 watersheds in 1998.

In 2002 This measure reflects states' biennial reporting under CWA 305(b), and is not intended to be reported against again until the FY2003 reporting cycle.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Watersheds that have greater than 80% of assessed waters meeting all water quality standards.	510 (FY00)	600	625 (FY 05)	8-digit HUCs

Baseline: As of 1998 state reports, 500 watersheds had met the criteria for water quality improving on a watershed basis. For a watershed to be counted toward this goal, at least 25% of the segments in the watershed must be assessed within the past 4 years consistent with assessment guidelines developed pursuant to section 305(b) of the Clean Water Act. The unit of measure is 8-digit Hydrologic Unit Codes (HUCs).

State/Tribal Water Quality Standards

In 2004 Assure that States and Tribes have effective, up-to-date water quality standards programs adopted in accordance with the Water Quality Standards regulation and the Water Quality Standards program priorities.

In 2003 Assure that States and Tribes have effective, up-to-date water quality standards programs adopted in accordance with the Water Quality Standards regulation and the Water Quality Standards program priorities.

In 2002 Assure that 25 States and 22 Tribes have effective, up-to-date water quality standards programs adopted in accordance with the Water Quality Standards regulation and the Water Quality Standards program priorities.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
States with new or revised water quality standards that EPA has reviewed and approved or disapproved and promulgated federal replacement standards.	25	20	20	States
Tribes with water quality standards adopted and approved	22	30	33	Tribes

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
(cumulative).				

Baseline: In 1999, fewer than 5% of tribes had water quality monitoring and assessment programs appropriate for their circumstances and were entering water quality data into EPA's national data systems. State water quality standards program reviews are under a 3-year cycle as mandated by the Clean Water Act under which all states maintain updated water quality programs. The performance measure of state submissions (above) thus represents a "rolling annual total" of updated standards acted upon by EPA, and so is neither cumulative nor strictly incremental. EPA must review and approve or disapprove state revisions to water quality standards within 60-90 days after receiving the state's package. As of this May EPA was overdue in approving or disapproving 38 new or revised standards from 21 states and tribes.

Protecting and Enhancing Estuaries

In 2004 Restore and protect estuaries through the implementation of Comprehensive Conservation and Management Plans (CCMPs).

In 2003 Restore and protect estuaries through the implementation of Comprehensive Conservation and Management Plans (CCMPs).

In 2002 Restored and protected over 137,000 acres of estuary habitat through the implementation of Comprehensive Conservation and Management Plans (CCMPs).

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Acres of habitat restored and protected nationwide as part of the National Estuary Program. (annual)	137,710	86,000	25,000	Acres

Baseline: As of January 2000, it is estimated that 65% of priority actions initiated and 400,000 habitat acres preserved, restored, and/or created.

Gulf of Mexico

In 2004 Assist the Gulf States in implementing watershed restoration actions in 14 priority impaired coastal river and estuary segments.

In 2003 Assist the Gulf States in implementing watershed restoration actions in 14 priority impaired coastal river and estuary segments.

In 2002 Assisted the Gulf States in implementing restoration actions by supporting the identification of place-based projects in 137 State priority coastal river and estuary segments.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Impaired Gulf coastal river and estuary segments implementing watershed restoration actions (incremental).	137	14	14	Segments

Baseline: There are currently 95 coastal watersheds at the 8-digit hydrologic unit code (HUC) scale on the Gulf coast. The Gulf of Mexico Program has identified 12 priority coastal areas for assistance. These 12 areas include 30 of the 95 coastal watersheds. Within the 30 priority watersheds, the Gulf States have identified 354 segments that are impaired and not meeting full designated uses under the States' water quality standards. 71 or 20% is the target proposed to reinforce Gulf State efforts to implement 5-year basin rotation schedules. The target of 71 is divided by 5 to achieve the goal for assistance provided in at least 14 impaired segments each year for the next 5 years.

Chesapeake Bay Habitat

In 2004 Improve habitat in the Chesapeake Bay.

In 2003 Improve habitat in the Chesapeake Bay.

In 2002 Meeting the annual performance goal to improve habitat in the Bay requires adherence to commitments made by the Chesapeake 2000 agreement partners and monumental effort/resources from all levels of government (local, state, and a range of Federal agencies) and from private organizations/citizens.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Acres of submerged aquatic vegetation (SAV) present in	85,252	86,000	87,000	Acres

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
the Chesapeake Bay. (cumulative)				

Baseline: In 1985, 0% of wastewater flow had been treated by Biological Nutrient Removal. In 1989, 49 miles of migratory fish habitat was reopened. In 1984, there were 37,000 acres of submerged aquatic vegetation in the Chesapeake Bay. In 1988, voluntary IPM practices had been established on 2% of the lands in the Chesapeake Bay watershed.

Verification and Validation of Performance Measures

Performance Measure: Watersheds that have greater than 80% of assessed waters meeting all water quality standards.

Performance Database: The Watershed Assessment Tracking Environmental Results System (WATERS) is used to summarize water quality information at the watershed level. For purposes of this national summary, "watersheds" are equivalent to 8-digit hydrologic unit codes (HUCs), of which there are 2,262 nationwide. WATERS is a geographic information system that integrates many existing data management tools including the Storage and Retrieval (STORET) database, the Assessment database as well as a new water quality standards database. State Clean Water Act (CWA) 305(b) data is submitted every two years and many states provide annual updates. [United States EPA (latest: August 2002) National Water Quality Inventory Report to Congress (305(b) report). Washington, DC: Office of Water. (841-R-02-001). This and prior reports (from 1992) available on the Internet: http://www.epa.gov/305b/]

Data Source: State CWA Section 305(b) reporting. The data used by the states to assess water quality and prepare its CWA Section 305(b) report include ambient monitoring results from multiple sources (state, United States Geological Survey (USGS), volunteer, academic) as well as predictive tools like water quality models. States compile diverse data to support water quality assessments; EPA uses the data to present a snap-shot of water quality as reported by the states, but does not use it to report trends in water quality. EPA's Office of Water and Office of Research and Development have established a monitoring and design team that is working with states on a 3 to 5-year project to recommend a design for a national probability-based monitoring network that could be used to provide both status and trends in water quality at a state and national level. Future data will be accompanied by quality assurance plans, as part of the State's Assessment Methodology, and data submitted to the OW database, STORET, will have the necessary accompanying metadata.

Methods, Assumptions and Suitability: States employ various analytical methods of data collection, compilation, and reporting including: 1) Direct water samples of chemical, physical, and biological parameters; 2) Predictive models of water quality standards attainment; 3) Probabilistic models of pollutant sources; and 4) Compilation of data from volunteer groups, academic interests and others. EPA supported models include BASINS, QUAL2E, AQUATOX, and CORMIX. Descriptions of these models and instructions for their use can be found at www.epa.gov/OST/wqm/. The standard operating procedures and deviations from these methods for data sampling and prediction processes are stored by states in the STORET database. EPA aggregates state data by watershed (as described above) to generate the national performance measure. State provided data describe attainment of designated uses in accordance with state water quality standards and thus represent a direct measure of performance. State CWA Section 305(b) data are suitable for providing a snapshot of the ambient water quality conditions that exist across the nation; however, nationally aggregated data are currently not suitable for year-to-year comparisons. As states update their monitoring programs to include probabilistic monitoring, we will be able to do nationally aggregated, year-to year comparisons.

QA/QC Procedures: QA/QC of data provided by states pursuant to individual state assessments (under CWA Section 305(b)) is dependent on individual state procedures. Numerous system level checks are built into WATERS based upon the business rules associated with the water quality assessment information. States are then given the opportunity to review the information in WATERS to ensure it accurately reflects the data that they submitted. Detailed data exchange guidance and training are also provided to the states. Sufficiency threshold for inclusion in this measure requires that 20% of stream miles in an 8-digit HUC be assessed. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies. This document is the quality management plan for the entire EPA Office of Water. It describes the quality system used by the Office of Water and applies to all environmental programs within the Office of Water and to any activity within those programs that involves the collection or use of environmental data.

Data Quality Review: Numerous independent reports have cited that weaknesses in monitoring and reporting of monitoring data undermine EPA's ability to depict the condition of the Nation's waters and to support scientifically-sound water program decisions. The most recent reports include the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program*[1], the March 15, 2000 General Accounting Office report *Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data*[1], and the 2001 National Academy of Sciences Report *Assessing the TMDL Approach to Water Quality Management.*[1]

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency to facilitate comparison and aggregation of state data to the national level; and 3) documentation so that data limitations and discrepancies are fully understood by data users. First, EPA enhanced two existing data management tools (STORET and the Assessment Database) so that they include documentation of data quality information. Second, EPA has developed a GIS tool called WATERS that integrates many databases including STORET, the Assessment database, and a new water quality standards database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results. Third, EPA and states have developed a guidance document: Consolidated Assessment and Listing Methodology - a Compendium of Best Practices[1] (released on the Web July 31, 2002 at www.epa.gov/owow/monitoring/calm.html) intended to facilitate increased consistency in monitoring program design and the data and decision criteria used to support water quality assessments.

And fourth, the Office of Water (OW) and EPA's regional offices have developed the *Elements of a State Water Monitoring and Assessment Program*, (August 2002) which is currently under review by our state partners. This guidance describes ten elements that each state water quality-monitoring program should contain and proposes time-frames for implementing all ten elements.

Data Limitations: Data are not representative of comprehensive national water quality assessments because states do not yet employ a monitoring design that characterizes all waters in each reporting cycle. States do not use a consistent suite of water quality indicators to assess attainment with water quality standards. For example, indicators of aquatic life use support range from biological community assessments to levels of dissolved oxygen to concentrations of toxic pollutants. These variations in state practices limit how the assessment reports provided by states can be used to describe water quality at the national level. States, territories and tribes collect data and information on only a portion of their waterbodies. There are differences among their programs, sampling techniques, and standards.

State assessments of water quality may include uncertainties associated with derived or modeled data. Differences in monitoring designs among and within states prevent the agency from aggregating water quality assessments at the national level with known statistical confidence. States, territories, and authorized tribes monitor to identify problems and typically lag times between data collection and reporting can vary by state.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: The Office of Water is currently working with states, tribes and other Federal agencies to improve the database that supports this management measure by addressing the underlying methods of monitoring water quality and assessing the data. Also, the Office of Water is working with partners to enhance monitoring networks to achieve comprehensive coverage of all waters, use a consistent suite of core water quality indicators (supplemented with additional indicators for specific water quality questions), and document key data elements, decision criteria and assessment methodologies in electronic data systems. The Office of Water is using a variety of mechanisms to implement these improvements including data management systems, guidance, stakeholder meetings, training and technical assistance, program reviews and negotiations.

EPA is working with states to enhance their monitoring and assessment programs, with a particular emphasis on the probabilistic approach. These enhancements, along with improving the quality and timeliness of data for making watershed-based decisions, will greatly improve the ability to use state assessments in consistently portraying national conditions and trends. Specific state refinements include developing rigorous biological criteria to measure the health of aquatic communities (and attainment with the aquatic life use) and designing probability-based monitoring designs to support statistically-valid inferences about water quality. The EPA Environmental Monitoring and Assessment Program (EMAP) design team has been instrumental in helping states design the monitoring networks and analyze the data. Initial efforts have focused on streams, lakes and coastal waters. Wetlands and large rivers will be targeted next. States are implementing these changes incrementally and in conjunction with traditional targeted monitoring. At last count 16 states have adopted probability-based monitoring designs, several more are evaluating them, and all but 10 are collaborating in an EMAP study.

References: Aggregate national maps and state and watershed specific data for this measurement are displayed numerically and graphically in the WATERS database. WATERS is publicly accessible at www.epa.gov/waters. State monitoring data is contained in the STORET system, also publicly available at www.epa.gov/storet. Links to user guides and descriptions of the databases can be found at the web sites. The Office of Water Quality Management Plan (July 2001) is available on the Intranet at http://intranet.epa.gov/ow/infopolicy.html.

Performance Measure: States with new or revised water quality standards that EPA has reviewed and approved or disapproved, and promulgated Federal replacement standards.

Performance Database: EPA maintains files on all approval/disapproval actions on new and revised state water quality standards and on promulgated Federal replacement standards. EPA Headquarters and regional personnel work together to maintain a manual record of state actions and EPA decisions. We also maintain in electronic format the text of state standards in a publicly-accessible Water Quality Standards Repository online at http://www.epa.gov/waterscience/standards/wqslibrary/.
There is also an Assessment Database, which tracks the water quality standard (WQS) attainment status of the Nation's surface waters (not publicly available). The Watershed Assessment Tracking Environmental Results System (WATERS) database is a GIS tool that maps this information. WATERS is used to summarize water quality information at the watershed level. For purposes of this national summary, "watersheds" are equivalent to 8-digit hydrologic unit codes (HUCs), of which there are 2,262 nationwide. WATERS is publicly accessible at www.epa.gov/waters.

Data Source: EPA Regional Offices.

Methods, Assumptions and Suitability: Information is collected manually, and the performance measure is a simple mathematical operation.

QA/QC Procedures: EPA headquarters is responsible for compiling the summary reports and querying EPA's regional offices as needed to resolve inconsistencies. EPA's regional offices are responsible for collecting any additional data needed from their client states and reporting the data to Headquarters.

Data Quality Review: EPA Headquarters and its regional offices annually review the WQS information to identify and resolve data issues.

New/Improved Data or Systems: EPA will continue to implement high priority elements of the long-term strategy for water quality standards and criteria, including efforts to improve electronic access to water quality standards information.

Data Limitations: N/A

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: N/A

References: The exact text of state and Tribal standards is available on the Internet at http://www.epa.gov/waterscience/standards/wqslibrary/.

Performance Measure: Cumulative number of tribes with water quality standards adopted and approved.

Performance Database: EPA headquarters maintains files on all Tribal water quality standards. EPA's regional offices submit summary reports based on these files.

Data Source: EPA's regional offices

Methods, Assumptions and Suitability: Information is collected manually, and the performance measure is a simple mathematical operation.

QA/QC Procedures: EPA headquarters is responsible for compiling the data, and querying EPA's regional offices as needed. EPA's regional offices are responsible for collecting any additional data from their client tribes and reporting the data to HQ.

Data Quality Review: EPA headquarters and its regional offices annually review the information to identify and resolve data issues.

New/Improved Data or Systems: N/A

Data Limitations: N/A

Error Estimate: No error estimate is available for this data.

References: The exact text of state and Tribal standards is available on the Internet at http://www.epa.gov/waterscience/standards/wqslibrary/.

Performance Measure: Acres of habitat restored and protected nationwide since 1987 as part of the National Estuary Program (NEP).

Performance Database: The Office of Wetlands Oceans and Watersheds has developed a standardized format for data reporting and compilation, defining habitat protection and restoration activities and specifying habitat categories. We have also designed a web page that highlights habitat loss/alteration in an educational fashion with graphics and images as well as the number of habitat acres protected and restored by habitat type, based on specific NEP reports. This enables EPA to provide a visual means of communicating NEP performance and habitat protection and restoration progress to a wide range of stakeholders and decision-makers.

Data Source: NEP documents such as annual work plans (which contain achievements made in the previous year) and annual progress reports are used, along with other implementation tracking materials, to document the number of acres of habitat restored and protected. EPA then aggregates the data provided by each NEP to arrive at a national total for the entire Program. EPA is confident that the data presented are as accurate as possible based on review and inspection by each NEP prior to reporting to EPA. In addition, EPA conducts regular reviews of NEP implementation to help ensure that information provided in these documents is generally accurate, and progress reported is in fact being achieved.

Methods, Assumptions and Suitability: Measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported, or of the estuary overall, but it is a common substitute. We recognize that habitat acreage does not necessarily correspond one-to-one with habitat quality, nor does habitat (quantity or quality) represent the only indicator of ecosystem health. Nevertheless, habitat acreage serves as an adequate surrogate, and is a suitable measure of on-the-ground progress made toward EPA's annual performance goal on habitat protection and restoration in the NEP.

QA/QC Procedures: Primary data are prepared by the staff of the NEP based on their own reports and from data supplied by other partnering agencies/organizations (that are responsible for implementing the action resulting in habitat protection and restoration). The NEP staff has been requested to follow guidance provided by EPA to prepare their reports and to verify the numbers. EPA then confirms that the national total accurately reflects the information submitted by each program. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies. This document is the quality management plan for the entire EPA Office of Water. It describes the quality system used by the Office of Water and applies to all environmental programs within the Office of Water and to any activity within those programs that involves the collection or use of environmental data.

Data Quality Review: No audits or quality reviews conducted yet.

Data Limitations: It is still early to determine the full extent of data limitations. Current data limitations include: information that may be reported inconsistently (based on different interpretations of the protection and restoration definitions), acreage that may be miscalculated or misreported, and acreage that may be double counted (same parcel may also be counted by partnering/implementing agency or need to be replanted multiple years). In addition, measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported (particularly in the year of reporting), but is rather a measure of on-the-ground progress made by the NEPs.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: We are examining the possibility of geo-referencing the data in a geographic information system (GIS).

References: Aggregate national and regional data for this measurement, as well as data submitted by the individual National Estuary Programs, is displayed numerically, graphically, and by habitat type in the Performance Indicators Visualization and Outreach Tool (PIVOT). PIVOT data is publicly available at http://www.epa.gov/owow/estuaries/pivot/overview/intro.htm. The Office of Water Quality Management Plan (July 2001) is available on the Intranet at http://intranet.epa.gov/ow/infopolicy.html

Performance Measure: Impaired Gulf of Mexico coastal river and estuary segments implementing watershed restoration actions.

Performance Database: Internal Gulf of Mexico Program Office (GMPO) Project Tracking Database containing fields for 8-digit Hydrologic Unit Code (HUC) and segment numbers for location of restoration actions. The data are based on the States' Clean Water Act (CWA) Section 303(d) List of impaired waterbodies. Data have been tracked in the GMPO database since 1993. In particular, HUCs and segment numbers for locations of restoration actions have been tracked since FY 2000, allowing for 5-year trend calculations by FY 2004.

Data Source: State Water Quality Agencies supply EPA's Office of Water lists of waters reported under CWA Section 303(d). These lists identify the locations of individual waterbodies that are impaired and do not, or are not expected, to meet water quality standards after implementation of water pollution controls. Many states also submit GIS coverages and/or maps that outline the spatial extent of their listed waters. EPA codes the spatial extent onto National Hydrography Dataset (NHD) Waterbody Reaches to create NHD Waterbody shapefiles. Reaches in the shapefiles are attributed with CWA Section 303(d) identifiers supplied by the states. There is a numeric code that uniquely identifies a reach in NHD, consisting of two parts: the first eight digits are the hydrologic unit code of the cataloging unit in which the reach is located; the last six digits are a sequentially, arbitrarily-assigned number. The waterbody shapefiles are sent to each state for review and comment. The format of the reviewed data is state dependent. In some cases, modifications are noted by the State and then corrections are made. The shapefiles also identify those impaired waterbodies, as reported in the CWA Section 303 (d) List, affected by restoration actions undertaken by the Gulf of Mexico Program and its partnership.

Methods, Assumptions and Suitability: One assumption is that cumulative watershed restoration actions in impaired segments will result in the removal of the segment from the State 303(d) List and the waterbody will no longer be listed for the identified impairment within a 10 year time frame. Another assumption is that data used to list the waterbody as impaired is sufficient and current.

QA/QC Procedures: The Gulf of Mexico Program Office cross-checks coastal river and estuary segments in its database with the States' CWA Section 303(d) list and with USGS topographic quadrangle maps. USGS maps are compiled to meet National Map Accuracy Standards.

Data Quality Reviews: States' list of impaired waters is the (CWA Section 303) (d) list. EPA is required by the CWA to review and approve or disapprove the list. If the list is not submitted to EPA, or is incomplete, EPA must develop the list for the State. The list is also subject to public review and comment. EPA believes that the data are accurate and reliable. State lists form the basis for State and EPA actions to address the impaired waters.

Data Limitations: Potential data limitations may include: (1) susceptibility to external factors that make it difficult to attribute trends in performance data to program effectiveness or (2) incomplete or missing data.

Error Estimate: By the end of FY 2004 and in coordination with updated State CWA Section 303(d) Lists, data uncertainty will be evaluated to determine the impact on the performance measure.

New/Improved Data or Systems: Based on data and information collected and recommendations from an Ad Hoc Committee Review, the Gulf of Mexico Program Office plans to more narrowly focus technical and financial assistance to identify specific impaired segments and restore them to meet water quality standards. Using a Strategic Assessment process involving Federal, State and local representatives the process will provide direct linkage between the restoration actions funded by GMPO and improved water quality.

References:

1998 CWA Section 303(d) Lists
2000 CWA Section 303(d) Lists
Draft Strategic Management Plan for the Gulf of Mexico Program 2000-2005
FY 2004 Gulf of Mexico Program Funding Guidance

Performance Measure: Acres of submerged aquatic vegetation (SAV) present in the Chesapeake Bay.

Performance Database: The SAV distribution data files are located at http://www.vims.edu/bio/sav/savdata.html and also at the EPA Chesapeake Bay Program Office (contact Nita Sylvester at sylvester.nita@epa.gov)

Data Source: Virginia Institute of Marine Sciences (via an EPA Chesapeake Bay Program grant to Virginia Institute of Marine Sciences)

Methods, Assumptions and Suitability: The SAV survey is a general monitoring program, conducted to optimize precision and accuracy in characterizing annually the status and trends of SAV in tidal portions of the Chesapeake Bay. The general plan is to follow fixed flight routes over shallow water areas of the Bay to comprehensively survey all tidal shallow water areas of the Bay and its tidal tributaries. Non-tidal areas are omitted from the survey. SAV beds less than 1 square meter are not included due to the limits of the photography and interpretation. Annual monitoring began in 1978 and is ongoing. Methods are described in the Quality Assurance Project Plan (QAPP) on file for the EPA grant and at the VIMS web site (www.vims.edu/bio/sav/).

QA/QC Procedures: Quality assurance project plan for the EPA grant to the Virginia Institute of Marine Sciences describes data collection, analysis, and management methods. This is on file at the EPA Chesapeake Bay Program Office. The VIMS web site at www.vims.edu/bio/sav/ provides this information as well. Federal Geographic Data Committee (refers to the Federal standards for metadata developed by this committee) (FGDC) metadata are included with the data set posted at the VIMS web site.

Data Quality Reviews: This indicator has undergone extensive technical and peer review by state, Federal and non-government organization partner members of the SAV workgroup and the Living Resources subcommittee. Data collection, data analysis and QA/QC are conducted by the principal investigators/scientists. The data are peer reviewed by scientists on the workgroup. Data selection and interpretation, the presentation of the indicator, along with all supporting information and conclusions, are arrived at via consensus by the scientists in collaboration with the resource manager members of the workgroup. The workgroup presents the indicator to the subcommittee where extensive peer review by Bay Program managers occurs.

Data Limitations: Due to funding constraints, there were no surveys in the years 1979-1983 and 1988. Spatial gaps in 1999 occurred due to hurricane disturbance and subsequent inability to reliably photograph SAV. Spatial gaps in 2001 occurred due to post-nine-eleven flight restrictions near Washington D.C.

Error Estimate: No error estimate is available for this data.

New/Improved Data or Systems: Some technical improvements (e.g., photo interpretation tools) were made over the 22 years of the annual SAV survey in Chesapeake Bay.

References: See bibliography at www.vims.edu/bio/sav/.

Statutory Authorities

Clean Water Act (CWA)
Safe Drinking Water Act (SDWA)
Marine Protection, Research and Sanctuaries Act (MPRSA)
Ocean Dumping Ban Act of 1988
Shore Protection Act of 1988
Clean Vessel Act
Water Resources Development Act (WRDA)
Marine Plastic Pollution, Research and Control Act (MPPRCA) of 1987
National Invasive Species Act of 1996
Coastal Wetlands Planning, Protection, and Restoration Act of 1990
North American Wetlands Conservation Act
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
Toxic Substances Control Act (TSCA)
Resource Conservation and Recovery Act (RCRA)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
Clean Air Act Amendments (CAA)
Pollution Prevention Act (PPA)
Estuaries and Clean Waters Act of 2000
Certain Alaskan Cruise Ship Operations (PL 106-554)

Research

Clean Water Act (CWA)
Safe Drinking Water Act (SDWA)
Marine Protection, Research and Sanctuaries Act (MPRSA)
Ocean Dumping Ban Act of 1988
Shore Protection Act of 1988
Clean Vessel Act
Water Resource Development Act (WRDA)
Marine Plastic Pollution, Research and Control Act (MPPRCA) of 1987
National Invasive Species Act of 1996
Coastal Wetlands Planning, Protection, and Restoration Act of 1990
North American Wetlands Conservation Act
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
Toxic Substances Control Act (TSCA)
Endangered Species Act

Objective 3: Reduce Loadings and Air Deposition.

By 2005, reduce pollutant loadings from key point and nonpoint sources by at least 11 percent from 1992 levels. Air deposition of key pollutants will be reduced to 1990 levels.

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Reduce Loadings and Air Deposition	**$2,040,199.9**	**$1,630,434.4**	**$1,273,743.2**	**($356,691.2)**
Environmental Program & Management	$152,742.1	$134,461.0	$139,277.0	$4,816.0
Science & Technology	$5,766.0	$5,496.6	$5,966.2	$469.6
State and Tribal Assistance Grants	$1,881,691.8	$1,490,476.8	$1,128,500.0	($361,976.8)
Total Workyears	**826.5**	**866.6**	**865.2**	**-1.4**

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Congressionally Mandated Projects	$241,582.9	$0.0	$0.0	$0.0
Disadvantaged Communities	$4,350.8	$4,481.3	$4,677.3	$196.0
Effluent Guidelines	$22,773.4	$23,010.3	$23,632.4	$622.1
Facilities Infrastructure and Operations	$11,335.7	$11,869.4	$11,267.3	($602.1)
Homeland Security-Critical Infrastructure Protection	$1,500.0	$0.0	$0.0	$0.0
Legal Services	$2,923.1	$3,170.7	$3,280.3	$109.6
Management Services and Stewardship	$5,710.6	$6,192.8	$5,282.3	($910.5)
NPDES Program	$40,991.0	$41,720.8	$44,375.7	$2,654.9
National Nonpoint Source Program Implementation	$16,488.6	$16,908.6	$17,628.0	$719.4
Planning and Resource Management	$0.0	$0.0	$641.2	$641.2
Recreational Water and Wet Weather Flows Research	$5,635.8	$5,496.6	$5,966.2	$469.6
Regional Management	$494.2	$490.7	$951.6	$460.9
State Nonpoint Source Grants	$237,476.8	$238,476.8	$238,500.0	$23.2
Wastewater Management/Tech Innovations	$8,840.1	$9,073.7	$9,485.2	$411.5
Water Infrastructure: Alaska Native Villages	$40,000.0	$40,000.0	$40,000.0	$0.0

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Water Infrastructure: Clean Water State Revolving Fund (CW-SRF)	$1,350,000.0	$1,212,000.0	$850,000.0	($362,000.0)
Water Quality Infrastructure Protection	$16,783.7	$17,239.3	$18,055.7	$816.4

Annual Performance Goals and Measures

NPDES Permit Requirements

In 2004 Current NPDES permits reduce or eliminate loadings into the nation's waters of (1) inadequately treated discharges from municipal and industrial facilities (direct and indirect dischargers); and (2) pollutants from urban storm water, CSOs, and CAFOs.

In 2003 Current NPDES permits reduce or eliminate loadings into the nation's waters of (1) inadequately treated discharges from municipal and industrial facilities (direct and indirect dischargers); and (2) pollutants from urban storm water, CSOs, and CAFOs.

In 2002 Current NPDES permits reduced or eliminated discharges into the nation's waters of (1) inadequately treated discharges from municipal and industrial facilities; and (2) pollutants from urban storm water, CSOs, and CAFOs.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Major point sources are covered by current permits.	83%	90%	90%	Point Sources
Minor point sources are covered by current permits.	74%	84%	87%	Point Sources
Loading reductions (pounds per year) of toxic, non-conventional, and conventional pollutants from NPDES permitted facilities (POTWs, Industries, SIUs, CAFOs, SW, CSOs).		2,500 million	2,750 million	pounds

Baseline: As of May 1999, 72% of major point sources and 54% of minor point sources were covered by a current NPDES permit. At the end of FY99, 53 of 57 states/territories had current storm water permits for all industrial activities, and 50 of 57 had current permits for construction sites over 5 acres. In June 1999, 74% of approximately 900 CSO communities were covered by permits or other enforceable mechanisms consistent with the 1994 CSO Policy. As of December 1999, approximately 14 states had current NPDES general permits for CAFOs and at least another 13 had issued one or more individual NPDES permits for CAFOs.

Clean Water State Revolving Fund: Annual Assistance

In 2004 900 projects funded by the Clean Water SRF will initiate operations, including 629 projects providing secondary treatment, advanced treatment, CSO correction (treatment), and/or storm water treatment. Cumulatively, 10,440 projects will have initiated operations since program inception.

In 2003 900 projects funded by the Clean Water SRF will initiate operations, including 515 projects providing secondary treatment, advanced treatment, CSO correction (treatment), and/or storm water treatment. Cumulatively, 9,540 projects will have initiated operations since program inception.

In 2002 1,100 projects funded by the Clean Water SRF initiated operations, including 400 projects providing secondary treatment, advanced treatment, CSO correction (treatment), and/or storm water treatment. Cumulatively, 8,642 projects have initiated operations since program inception.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
CW SRF projects that have initiated operations. (cumulative)	8,642	9,540	10,440	SRF projects

Baseline: The Agency's National Information Management System (NIMS) shows, as of July 1998, 39 states/territories were conducting separate annual audits of their SRFs and utilizing fund management principles. NIMS shows, as of June 1998, 25 states were

meeting the "pace of the program" measures for loan issuance, pace of construction, and use of repayments. As of September 1998, 8 states were using integrated planning and priority systems to make SFR funding decisions. NIMS shows 3,909 SRF projects initiated as of June 1998.

Wastewater Treatment Facility Compliance

In 2004 Enhance public health and environmental protection by securing the nation's critical wastewater infrastructure through support for homeland security preparedness, including vulnerability assessments, emergency operations planning, and system operator training.

In 2003 Enhance public health and environmental protection by securing the nation's critical wastewater infrastructure through support for homeland security preparedness, including vulnerability assessments, emergency operations planning, and system operator training.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Percent of the population served by, and the number of, large and medium-sized (10,001 and larger) Publicly Owned Treatment Works (POTWs) that have taken action for homeland security preparedness.		65%/5000	75%/8000	%pop/systems

Baseline: Baseline will be established in FY 2003.

Research

Wet Weather Flow Research

In 2004 Provide to states, regions and watershed managers' indicators, monitoring strategies, and guidance for determining the effectiveness of Best Management Practices (BMPs) for wet weather flows in meeting water quality goals.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	Units
Report on fecal indicator monitoring protocols for different types of recreational water.			1	report
Provide guidance on indicator selection and monitoring strategies for evaluating the effectiveness of BMPs.			9/30/04	guidance

Baseline: The costs and complexities of meeting water quality goals subject to urban stormwater permits are daunting. The role of Best Management Practices (BMP's) as both an effective and economical means to meet permit requirements remains the central regulatory and non-regulatory approach for restoring much of the Nation's degraded water quality in urban environments. The scientific literature and reviews of current design and monitoring practices show that the effectiveness of BMPs is highly variable, is often defined and reported differently, and that monitoring rarely documents biological water quality improvements. Efforts are needed to better monitor and characterize the performance of BMPs by detailed analysis of the physical, chemical and biological processes common to many diverse BMPs. Based on on-going research in this area, in FY 2004, EPA will provide comprehensive guidance for application of stormwater BMPs in highly variable urban watersheds across the U.S. This guidance will provide states, regions and watershed managers a means for determining the effectiveness of BMPs in meeting water quality goals.

Verification and Validation of Performance Measures

Performance Measure: Major Point sources are covered by current permits; Minor Point Sources are covered by current permits.

Performance Database: United States EPA. Permit Compliance System. [database]. (2002). Washington, D.C. [Office of Enforcement and Compliance Assurance].

The Permits Compliance System (PCS) will be used to determine which individual permits have not exceeded their expiration dates through fields for permit issuance and expiration dates. EPA has carried out detailed permit renewal backlog tracking with PCS data since November 1998. To better capture the universe of facilities covered under the NPDES program, beginning in fiscal year 2003, EPA will also include facilities covered under non-storm water general permits in its permit renewal backlog calculations. This change will add 64,000 facilities to the universe from which the permit renewal backlog is calculated. Data for these facilities will be obtained from the Permit Issuance Forecasting Tool (PIFT). The PIFT has been used to track non-storm water general permit facilities since January 2001.

Data Source: EPA's regional offices and states enter data into PCS and PIFT.

Methods, Assumptions and Suitability: For individual permits, reports are generated from PCS that use permit issuance and expiration dates to aggregate, across each state, the number of major and minor permits which have not exceeded expiration dates. These data measure the number of current permits compared with the universe of individual permits. The PIFT provides the number of facilities covered by current non-storm water general permits which are not tracked in PCS. Together the PCS and PIFT data are intended to measure NPDES program coverage of facilities with up-to-date permit requirements. Data are not available at the national level on facilities covered by storm water general permits. The data are suitable for year -to-year comparisons of officially tracked permit status.

QA/QC Procedures: EPA Headquarters (HQ) reviews data submitted by states as part of the QA/QC process. The Office of Water (OW) has generated state-by-state reports, listing what appears in PCS for key data fields for facilities and discharge pipes (name, address, Standard Industrial Classification (SIC) code, latitude/longitude, Hydrologic Unit Code (HUC), reach, flow, issuance date, expiration date, application received date, effective date, etc.). These reports were distributed in January 2001 to state and regional PCS, NPDES, and Geographic Information Systems (GIS) coordinators to allow states to "see what EPA sees" when it views PCS data. These reports are available on a password protected web site maintained by an EPA contractor. In addition to actual data elements listed above, the site includes summary reports of missing and available data nationally and for every state. (United States EPA (2002). Permit Compliance System Reports. Washington, D.C.: Office of Wastewater Management. Available on the Internet [with password]: http://clients.limno.com/protected/pcscleanup

Where discrepancies exist between state and PCS data, OW is identifying such discrepancies and making corrections in PCS, where necessary. Additionally, many states have been collecting and verifying NPDES data on their own, but maintain these data in separate state-level systems (electronic and hard copy). EPA plans to populate fields in PCS that are currently blank with existing state-level data provided by states. Regions enter data into the PIFT, an Access data base maintained by the Water Permits Division, on facilities covered by non-storm water general permits. The PCS database is managed by the Office of Enforcement and Compliance. The Office of Water's Quality Management Plan was approved on September 28, 2001.

Data Quality Review: Office of Inspector General (OIG) audits 8100076 (3/13/98) and 8100089 (3/31/98) discussed the need for current data in PCS. For the year 2002, PCS has been listed as an Agency-Level Weakness under the Federal Managers Financial Integrity Act. This weakness affects EPA's ability to obtain a true picture of the status of the NPDES program. OW is categorizing the form in which the data exist at the state level (e.g. whether in PCS, in a separate state database, or in paper copy only). As EPA creates a picture of national PCS data availability, staff is working with individual states and EPA's regional offices to tailor approaches to getting key data into PCS. OW is offering ongoing data upload, data entry, and, if necessary, data compilation support to states.
EPA is working to modernize PCS, to provide a system that is easier to use and maintain, as well as one that incorporates new, and evolving, NPDES program requirements. The modernization effort will:

1. Provide a system which is available on the desktop via a web browser;

2. Provide a powerful and easy to use, reporting and query capability;

3. Provide NPDES Permit Writer Tool capability directly linked to the PCS database;

4. Support new and enhanced NPDES programs such as Storm Water, Concentrated Animal Feeding Operations (CAFOs), Combined Sewer Overflows (CSOs), Sanitary Sewer Overflows (SSOs), Pretreatment, and Biosolids;

5. Take advantage of new technologies making integration with other EPA systems a standard way of doing business, rather than requiring special programming;

6. Address new EPA initiatives such as tracking reduced pollutant loadings, burden reduction through electronic reporting, and geo-spatial analysis in individual watersheds; and

7. Offer new, and enhanced, alternatives for states to transmit data to PCS, such as the Interim Data Exchange Format (IDEF), via EPA's Central Data Exchange (CDX) and the National Environmental Information Exchange Network.

Data Limitations: There are significant data gaps for minor facilities and discrepancies between state databases and PCS. Some states have established their own data systems and have not transferred their data to EPA. The program emphasis has traditionally been on tracking major permits, so many states and EPA regional offices did not enter data for minor permits into PCS.

Error Estimate: We believe that the permit renewal backlog data for major facilities is accurate within 2 percent based on input from EPA's regional offices and states through a quarterly independent verification. For minor facilities, however, the

confidence interval is much less precise and probably overestimates the permit renewal backlog for minor facilities by 5 percent based on anecdotal information from EPA's regional offices and states.

New/Improved Data or Systems: EPA headquarters is providing contractor assistance to improve the data quality of PCS. By 2004, PCS is scheduled to be modernized to make it easier to use and to ensure that it includes all needed data to manage the National Pollutant Discharge Elimination System Permit program. EPA is also looking at refining the backlog measure by tracking permits that are issued based on changed situations, e.g., new water quality requirements or effluent guidelines or changes in the facility's discharge.

References:

Region 10's National Pollutant Discharge Elimination System Permit Program - March 13, 1998 (8100076)
Kansas National Pollutant Discharge Elimination System Program - March 31, 1998 (8100089)
PCS information is publicly available at: http://www.epa.gov/compliance/planning/data/water/pcssys.html

Performance Measure: Loading reductions (pounds per year) of toxic and non-conventional, and conventional pollutants from NPDES permitted facilities Publicly Owned Treatment Works (POTWs), Industries, Significant Industrial Users (SIUs), Concentrated Animal Feeding Operations (CAFOs), Storm Water (SW), Combined Sewer Overflows (CSOs)).

Performance Database: This measure is calculated using a spreadsheet[1] that draws from several data sources. An average "per facility" loadings value is assigned to each permitted effluent discharger according to the industrial sector of the facility. Each EPA regional office reports the actual number of permits issued in the past year for each industrial sector, typically drawn from EPA's Permit Compliance System. Using both the average per facility value and the number of permits issued, the spreadsheet then generates the values for the total pollutants reduced. For other sources, such as POTWs, CSOs, and Storm Water, that are not included in the calculation as of calendar year 2002, new sector specific modeling is being developed in order to more fully characterize the pollutant loading reductions resulting from the entire NPDES program. In 2003, we are adding an estimate for CSOs using a model that draws information from the Clean Water Needs Survey[1]. We are also developing a model[1] to estimate pollutant reductions from POTWs, both with and without pretreatment programs. We expect that model to draw information from Discharge Monitoring Reports (DMRs) contained in PCS, as well as the annual reports from POTWs to EPA and States. In the future, we also expect to develop a model to estimate pollutant reductions from storm water.

Data Sources: For direct dischargers subject to effluent guidelines, the average per facility value for pollutant reduction is derived from the Technical Development Documents (TDDs) produced at the time of the effluent guideline (ELG) rulemaking. TDDs are available for: Pulp & Paper, Pharmaceuticals, Landfills, Industrial Waste Combustors, Centralized Waste Treatment, Transportation Equipment Cleaning, Pesticide Manufacturing, Offshore Oil & Gas, Coastal Oil & Gas, Synthetic Based Drilling Fluid, and Concentrated Animal Feeding Operations. States and EPA's regional offices enter data into PCS and the Clean Water Needs Survey.

Methods, Assumptions and Suitability: EPA plans to use the data described above to feed into models that are being developed to determine loadings. The data will be aggregated across different types of point sources to determine loading reductions at the national level. Loadings appear to be the best surrogate for determining the environmental impacts of the various point sources.

QA/QC Procedures: EPA reviews critical data submitted by states. EPA has a project underway to work with states to improve the data in PCS (See earlier narrative for "Major/Minor Point Sources Covered by Current Permits.") Load reductions are estimated by modeling the various categories of sources. Actual data will be used to calibrate and verify the models, used in accordance with the Office of Water's Quality Management Plan, approved September 28, 2001. The PCS database is managed by the Office of Enforcement and Compliance, which provides system-specific user manuals.

Data Quality Reviews: Office of Inspector General (OIG) audits 8100076 (3/13/98) and 8100089 (3/31/98) discussed the need for current data in PCS. As of mid-year 2002, PCS is listed as an Agency-Level Weakness under the Federal Managers Financial Integrity Act. This weakness affects EPA's ability to obtain a true picture of the status of the NPDES program. OW is categorizing the form in which the data exist at the state level (e.g. whether in PCS, in a separate state database, or in paper copy only). As EPA creates a picture of national PCS data availability, staff is working with individual states and EPA's regional offices to tailor approaches to getting key data into PCS. OW is offering data upload, data entry, and, if necessary, data compilation support to states and anticipates completion of the project by the end of calendar year 2002.

EPA is working to modernize PCS, to provide a system that is easier to use and maintain as well as one that incorporates new, and evolving, NPDES program requirements. The modernization effort will:

1. Provide a system which is available on the desktop via a web browser;

2. Provide a powerful and easy to use, reporting and query capability;

3. Provide NPDES Permit Writer Tool capability directly linked to the PCS database;

4. Support new and enhanced NPDES programs such as Storm Water, Concentrated Animal Feeding Operations (CAFOs), Combined Sewer Overflows (CSOs), Sanitary Sewer Overflows (SSOs), Pretreatment, and Biosolids;

5. Take advantage of new technologies making integration with other EPA systems a standard way of doing business, rather than requiring special programming;

6. Address new EPA initiatives such as tracking reduced pollutant loadings, burden reduction through electronic reporting, and geo-spatial analysis in individual watersheds; and
7. Offer new, and enhanced, alternatives for states to transmit data to PCS, such as the Interim Data Exchange Format (IDEF), via EPA's Central Data Exchange (CDX) and the National Environmental Information Exchange Network.

Data Limitations: There are significant data gaps in PCS, including reliability issues for minor facilities, general permits, and specific categories of dischargers, such as CAFOs. Additionally, neither monitoring nor flow data are required for certain categories of general permits. The Agency, therefore, is not able to provide sufficient information to measure loadings reductions for all of the approximately 550,000 facilities that fall under the NPDES program, also making it difficult to assess changes in water quality. The effluent guidelines loadings are estimates based the number of permits issued across an industrial sector.

Error Estimate: Because this is a new modeling exercise, it is not yet possible to estimate the error in determining projected loadings.

New/Improved Data or Systems: EPA Headquarters is providing contractor assistance to improve the data quality in PCS. By 2004, PCS is scheduled to be modernized to make it easier to use. As the modernized system is being developed, additional efforts are underway to bolster comprehensive data collection to ensure that the modernized system includes data needed to manage the National Pollutant Discharge Elimination System program.

References:

Effluent guidelines development documents are available at: http://www.epa.gov/waterscience/guide and at http://www.epa.gov/water/soft.html
Modeling databases and software being used by the Office of Water are available at: http://www.epa.gov/water/soft.html

Performance Measure: Clean Water State Revolving Fund (CWSRF) projects that have initiated operations.

Performance Database: Clean Water State Revolving Fund National Information Management System (NIMS.)

Data Sources:

1. Reporting by municipal and other facility operators.

2. Entry by state regulatory agency personnel and by EPA's regional staff.

3. Collecting and reporting once yearly.

Methods, Assumptions and Suitability: Data entered into NIMS directly represent the units of performance for the performance measure. These data are suitable for year-to-year comparison and trend indication.

QA/QC Procedures: EPA's headquarters and regional offices are responsible for compiling the data and querying states as needed to assure data validity and conformance with expected trends. States receive data entry guidance from EPA headquarters in the form of annual memoranda: "Request for Annual Update of Data for the Clean Water State Revolving Fund National Information Management System, July 1, 200X through June 30, 200X."

Data Quality Reviews: EPA's headquarters and regional offices annually review the data submitted by the states. These state data are publicly available at http://www.epa.gov/r5water/cwsrf/index.htm# in individual state reports. Headquarters addresses significant data variability issues directly with states, or through the appropriate EPA regional office. An annual EPA headquarters' "NIMS Analysis" provides detailed data categorization and comparison. This analysis is used during:

1. Annual EPA regional office and state reviews to identify potential problems with the program's pace which might affect the performance measure.

2. Biennial reviews by EPA's headquarters of regional oversight of state revolving funds.

3. Annual reviews by EPA's regional offices of their states' revolving funds operations.

State data quality is also evaluated during annual audits performed by independent auditors or by the appropriate regional office of the EPA Inspector General. These audits are incorporated into EPA headquarters' financial management system.

Data Limitations: There are no known limitations in the performance data, which states submit voluntarily. Erroneous data can be introduced into the NIMS database by typographic or definitional error. Typographic errors are controlled and corrected through data testing performed by EPA's contractor. Definitional errors due to varying interpretations of information requested for specific data fields have been virtually eliminated in the past two years as a result of EPA headquarters' clarification of definitions. These definitions are publicly available at: http://www.epa.gov/r5water/cwsrf/pdf/nimsdef.pdf. There is typically a lag of approximately two months from the date EPA asks states to enter their data into the NIMS database, and when the data are quality-checked and available for public use.

Error Estimate: Due to the rapid growth of this program, past estimates of annual performance (relative to a target), compared to actual performance data received two years later, have been accurate to an average of approximately 12 percentage points.

New/Improved Data or Systems: This system has been operative since 1996. It is updated annually, and data fields are changed or added as needed.

References:

State performance data as shown in NIMS are available by state at: http://www.epa.gov/r5water/cwsrf.
Definitions of data requested for each data field in NIMS is available at: http://www.epa.gov/r5water/cwsrf/pdf/nimsdef.pdf
The Office of Water Quality Management Plan, July 2001 (approved September 28, 2001) addresses the quality of data in NIMS. Not publicly available.
The "National CWSRF & DWSRF Audit Strategy," August 2002, addresses the accuracy of state data, among other things. Not publicly available
The annual "NIMS Analysis" provides information used to support the performance measure. Not publicly available.

Performance Measure: Provide guidance on indicator selection and monitoring strategies for evaluating the effectiveness of BMPs.

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: Guidance

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

Performance Measure: Report on fecal indicator monitoring protocols for different types of recreational water.

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: Report

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

Statutory Authorities

Clean Water Act
Clean Air Act
Coastal Zone Act Reauthorization Amendments of 1990
Safe Drinking Water Act
Toxic Substances Control Act
Wet Weather Water Quality Act of 2000
Marine Protection, Research and Sanctuaries Act
Water Resources Development Act (WRDA)
Certain Alaskan Cruise Ship Operations (PL 106-554)

Research

Clean Water Act
Clean Air Act
Coastal Zone Act Reauthorization Amendments of 1990
Safe Drinking Water Act
Toxic Substances Control Act